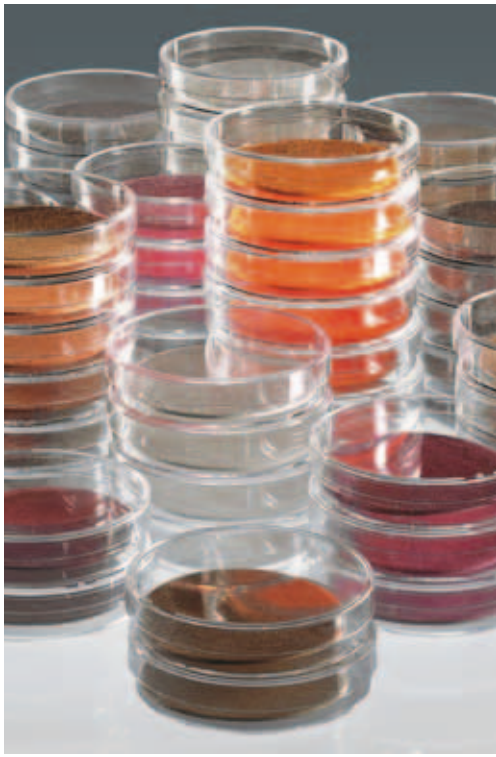
sartorius stedim biotech

Microbiological Control



turning science into solutions

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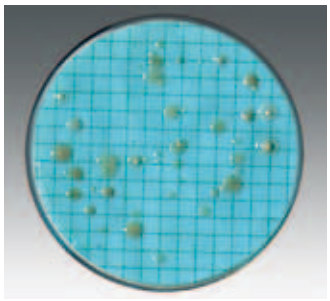
Microbiological Quality Control



Colony counting
Quantitative and reproducible detection of trace contamination or infection as well as the capability of performing efficient, cost-effective testing procedures under routine conditions are the requirements placed on a practical microbiological testing method. The membrane filter method optimally meets these requirements, and Sartorius Stedim Biotech offers the ideal range of filters and equipment to carry out this method.

In the standard membrane filter method, a membrane filter with the appropriate pore size is placed in a filter holder and the sample is filtered. Any microorganisms present in the sample are retained by the pore structure on the surface of the membrane filter. The membrane filter is then placed on an appropriate culture medium and incubated to detect these microbes.

During incubation, the exchange of nutrients and metabolites takes place through the pore system of the membrane filter. The colonies that develop during incubation on the membrane filter surface are then counted and related to the filtered sample volume.

Sartorius Stedim Biotech specifically manufactures **individually packaged gridded membrane filters** for this application. These are ready to use and strictly quality controlled for colony growth.

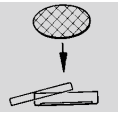
The fully automated Microsart e.motion membrane filter dispenser releases gridded membranes from their individual, specially developed and sterile packaging that does not require any interleaving paper. Moreover, Sartorius Stedim Biotech also offers individually, sterile-packaged membrane filters in easy-to-open envelopes. Each one is clearly labeled with the product identification and lot number. Membranes with a 0.45 µm pore size are used on a standard basis for microbiological analysis.

Sartorius Stedim Biotech additionally supplies special membrane versions known as high-flow membranes. They deliver 30% higher flow rates compared with conventional 0.45 µm pore size membranes. The specially designed pore structures of 0.45 µm pore size membranes enable faster filtration runs thanks to their high flow rate performance and throughput. Just like every lot of Sartorius Stedim Biotech 0.45 µm membrane filters, the special high flow versions are tested and released in compliance with ISO 7704.

Nutrient Pad Sets (NPS) provide added convenience. These are dehydrated culture media that are already individually inserted in a petri dish and sterilized. After they have been moistened with 3.0–3.5 ml of demineralized, sterile water, they are ready to use immediately. To find out which colonies typically grow on which NPS, please refer to page 24. Our wide array of culture media covers all the types needed in the food and beverage industry and in the pharmaceutical industry as well as for water analysis.

NPS are continuously enhanced as part of our development program to adapt our products to changing application requirements. Besides the new NPS types, we also offer Nutrient Pads in a new packaging design. The standard NPS box contains 100 sterile Nutrient Pads, each of which is individually inserted in a petri dish and sterilized. Ten each of these petri dishes are sealed in an aluminum bag. This special packaging in bags protects the sensitive formula constituents of the Nutrient Pad from fluctuations in humidity and temperature during transportation and storage. As a result, it guarantees the high quality of our NPS throughout their entire shelf life up to 24 months.

And this is precisely what makes the Sartorius Stedim Biotech Nutrient Pads Sets so unique: No other ready-to-use culture media around the globe assure such consistently high quality and reproducible results for up to 24 months.



Nutrient Pad Sets
Page 24

Individually packaged, gridded membrane filters
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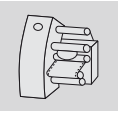

Microsart® e.motion
Membrane filter dispenser
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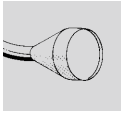

Gelatin membrane filters:
Page 8

Other bacteriological water tests
A procedure for collecting Legionella organisms specifies polyamide membranes (diameter 142 mm), of the pore size 0.2 µm or 0.45 µm.

For isolation of bacteriophages from water, Sartocon crossflow filter cassettes with polyether sulfone membrane (100,000 MWCO) deliver excellent results.

Airborne bacteria and viruses
Gelatin membrane filters are routinely used for quantitative sampling of airborne microbes in cleanroom and isolator monitoring. In addition, their effectiveness in collecting the smallest airborne viruses and bacteriophages has been proven. The reason: Gelatin appears to have a protective effect on the viruses collected and can be dissolved in buffer or a different medium for subsequent identification of the type of virus (page 8).

Gelatin membrane filters can also be used for routine monitoring of bacteriophages in the ambient air of dairies.

For faster and more convenient filtration of samples
Sterile single-use funnels and preassembled Monitors can be used in place of stainless steel funnels and vacuum filters holders .

Biosart® 250 Funnels
The 250-ml Biosart® funnels eliminate time-consuming sterilization of one sample to the next. The large inner diameter of the funnel base ensures exceptionally fast filtration runs (page 33).

Biosart® 100 Monitors
These complete Monitors featuring a 100-ml capacity are available with incorporated filters in a choice of different pore sizes, filter colors and diameters. The completely sterile units need to be used in conjunction with various culture media. After pouring in an appropriate liquid culture medium to wet the interior cellulose pad, the lid and base of the Monitor can be easily converted into a petri dish (page 30).

Combisart® Systems
The Combisart® design enables equipment and consumables to be optimally combined to meet specific needs. Each filter station on the multi-branch manifold has an air filter for sterile venting.

Sterisart®
Sterisart® enables sterility testing to be performed in a completely closed system according to international pharmacopeias.

Biosart® 250 Funnels:
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Combisart®
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Biosart® 100 Monitors:
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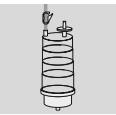

Sterisart®
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Air Sampler for Critical Applications

The system consists of the MD8 airscan® air sampler and disposable gelatine filter units. The system is routinely used for the quantitative detection of air-borne organisms, mainly at filling lines in sterile areas of class A (classification according to "EU Guide for GMP"), isolators, or blow-fill-seal machines.

The exceptionally high air flow rate of 8 m^3/h enables isokinetic sampling at flow rates that are usual in laminar flow as well as filtration of 1 m^3 air very quickly (less than 8 minutes). The filter unit can be placed separately from the air sampler for remote sampling.

The MD8 airscan® air sampler allows to adjust selectively and easily air flow rate and sample removal speed. By means of a specially developed calibration unit (see accessories), the user can calibrate the MD8 airscan® locally, e.g. within the scope of validation steps.

After removing the sample, the gelatine filter can be placed directly on the agar culture medium for incubation and colony growth.

Specifications

Specifications for the MD8 airscan® air sampler

Air flow rate	2.0 m^3/h – 8 m^3/h adjustable in 100-liter steps
Timer	1–99 minutes, adjustable in 1-minute steps
Max. deviation	±5% in a temperature range of 15°–35°C
Noise level	For gelatine membrane filters, max. 62 dB (A)
Weight	Approx. 6.5 kg
Dimensions (L×W×H)	375×242×228 mm
Correction of the air flow rate setting	When the entered air flow rate cannot be attained, the display shows the max. attainable flow rate for a corresponding new setting below this value.

Ordering information for the MD8 airscan® air sampler

Order number	
16746	MD8 airscan® air sampler, 230 V, 50 Hz
16747	MD8 airscan® air sampler, 115 V, 60 Hz
16748	MD8 airscan® air sampler, 100 V, 50–60 Hz

Each version can be switched from 50 to 60 Hz and back.

Accessories for the MD8 airscan® air sampler

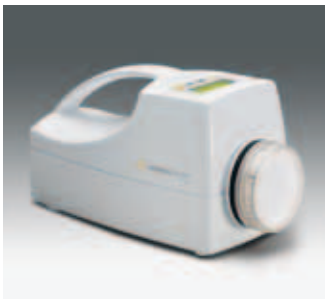
Order number	
17801	Holder for disposable gelatine filter units

Ordering information for consumables
Disposable gelatine units, sterile, pack of 10

Order number	
17528--80----ACD	Individually packed in 1 polyethylene bag each
17528--80----BZD	Individually packed in 3 polyethylene bags each
17528--80----VPD	Individually packed in 3 polyethylene bags each, but label on innermost bag

Special brochures available on request. Order no. SLF3001-e | SM-3011-e

AirPort MD8
Battery-Powered Portable Air Sampler



AirPort MD8 is the air sampler for the pharmaceutical industry, the biotechnology, the food and beverage industry, for hospitals' environmental care and for work safety.

AirPort MD8 offers the following benefits

- Battery-powered and portable for universal use.
- Battery power level clearly indicated so constant performance during sampling is guaranteed.
- Ergonomic design and easy to clean.
- Flexible adjustment possibilities of the volume flow and the sample volume.
- User-friendly prompting with the option of four languages; English, French, German and Spanish.
- Parameters last used stored even after automatic shut-off.
- The device can be calibrated locally.

For guaranteeing reliable and exact measurement results AirPort MD8 uses the gelatine membrane filter method or the Impaction method with BACTair™.

Specifications

Specifications for AirPort MD8

Volume flow regulation	By an integrated impeller wheel.
Volume flow adjustable	30 l/min., 40 l/min., 50 l/min. and 125 l/min.
Fixed given sample volumes	25, 50, 100, 250, 500, 750 and 1000 liters. In addition, the sample volume can be chosen manually in 5-liter steps.
Operational life with one battery charge	Approx. 4.5 hours for 50 l/min
Noise level	For gelatine membrane filters 48 dB (A)
Weight	Approx. 2.5 kg
Dimensions (L×W×H)	300×135×165 mm

Power supply

Battery	NiMH 16.8 Volt/3800 mAh
Battery charger input	100–240 V/47–63 Hz/600 mA
Battery charger output	24 V/1000 mA
Charging time	Approx. 4.5 hours for empty battery

Ordering information for the AirPort MD8

Order number	
16757	AirPort MD8, complete with holder (17801) for gelatine disposable units and battery charger (69898525).

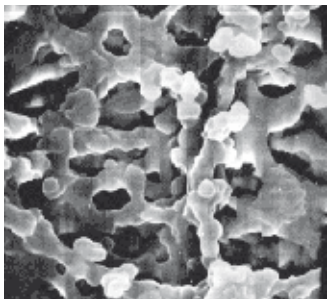
Accessories for the AirPort MD8

Order number	
17803	Adapter for BACTair™ on the AirPort MD8 air sampler
1ZPX-D0002	Covers for BACTair™ Culture Media Plates, 10×2 units individually, sterile packaged
17801	Holder for disposable gelatine filter units
69898525	Battery charger

Ordering information for consumables
Please refer to the following pages.

Special brochures available on request. Order no. SM-1502-e and SM-4023-e

Gelatine Membrane Filters



Gelatine filters in conjunction with the MD8 air samplers (gelatine filter method) are used for collecting of airborne microbes and viruses. Gelatine filter disposables are individually packed, presterilized and ready-to-connect units, each consisting of a gelatine membrane filter and a holder. Gelatine membrane filters are still available as filter discs, suitable for the filter holder 17655 (80 mm diameter) supplied with the MD8 airscan® air samplers, as well as in smaller diameters.

Gelatine filters in conjunction with the MD8 air samplers offer the following features and benefits:

- "Absolute" retention rate (99.9995% for Bac. sub. niger spores, 99.94% for T3 phages).
- The filter maintains the viability of collected microorganisms for a relevant and meaningful sampling time.
- Gelatine filters are completely water-soluble. Therefore, microbes in one sample can be cultivated in | on different nutrient media or low and high bacteria counts can be measured. The sample is not affected by inhibitors.
- The solubility of the gelatine filter is a prerequisite for virus sampling.

Specifications

Specifications of gelatine filters

Gelatine filters	Water soluble, pore size 3 µm, 80 mm diameter, thickness approx. 250 µm
Thermal resistance	Max. 60°C
Residual dampness content	46-49%
Air flow rate	Approx. 2.7 l/min./cm^2 at ΔP = 0.05 bar
Retention rates	1. Bac. subtilis niger spores 99.9995% at 0.25 m/s inlet velocity. 2. Coli phages: phage T1, 99.9% at 0.3 m/s inlet velocity and 50% rel. air humidity. Phage T3, 99.94% at 0.3 m/s inlet velocity and 80% rel. humidity.
Filtration area	38.5 cm^2
Conditions for use	Room temperature, max. 30°C, max. air humidity 85%
Sterilization	Supplied presterilized by gamma irradiation

Disposable gelatine units, sterile, pack of 10

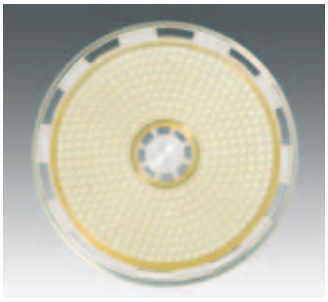
Order number	
17528--80----ACD	Individually packed in 1 polyethylene bag each
17528--80----BZD	Individually packed in 3 polyethylene bags each
17528--80----VPD	Individually packed in 3 polyethylene bags each, but label on innermost bag

Gelatine disc filter, sterile, sealed in units of five each in a polyethylene bag

Order number	Diameter	Package size
12602--80----ALK	80 mm	50
12602--50----ALN	50 mm	100
12602--50----ALK	50 mm	50
12602--47----ALN	47 mm	100
12602--47----ALK	47 mm	50
12602--37----ALK	37 mm	50

Special brochure available on request. Order no. SLF3001-e | SM-3011-e

BACTair™ – Big Impact.
Microbiological Air Monitoring by the Impaction Method



A new developed system for sampling airborne organisms that allows impaction onto culture media plates, where the plates function directly as collection heads. This means that the collection properties are integrated right into the culture media plates. Metal sieve plates or metal collection heads with slots, which have to be sterilized for routine samplings on a regular basis, are eliminated. Now, non-sterile sieves or slots have become a thing of the past.

The geometry of the culture medium plate and the 400 holes in the sieve plate yield exceptional sampling efficiency, which is generally higher than that of other impaction samplers.

This new method uses the AirPort MD8 air sampler to pump the air stream. BACTair™ is ready-to-connect to the AirPort MD8.

BACTair™ offers the following benefits
- Individually, sterile packaged
- Integrated disposable sieve
- Pre-filled with agar media
- Samples 1 m^3 in just 8 min
- Optimized geometry

Specifications

Specifications for BACTair™

Material	Polystyrene
Dimensions	116 × 24 mm
Number of impaction holes	400 holes, ∅ 0.47 mm each
High retention of particles	> 0.65 µm
Sterilization	Gamma irradiation

BACTair™ Culture Media Plates

Order Number	Description
14320-110----ACD	BACTair™ – Culture medium plate with Tryptic Soy Agar (TSA), 110 mm, individually, sterile packaged, 10 units
14321-110----ACD	BACTair™ – Culture medium plate with Sabouraud Agar (acc. USP), 110 mm, individually, sterile packaged, 10 units

Other BACTair™ Culture Media types on request.

Air Sampler

16757	AirPort MD8 Air Sampler for BACTair™ incl. charger

Accessories

17803	Adapter for BACTair™ on the AirPort MD8 air sampler
1ZPX-D0002	Covers for BACTair™ Culture Media Plates, 10 × 2 units individually, sterile packaged

Special brochures are available on request. Order no. SM-4023-e and SL-2047-e

Accessories
for the MD8 Air Samplers

New calibration unit
The user can calibrate the MD8 airscan® and AirPort MD8 directly on the job by means of the calibration unit*.

This is absolutely necessary above all within the scope of validation steps, for which it is important that the shown air flow rate (desired value at the MD8) corresponds to the actual air amount (actual value at the calibration device). The calibration unit is supplied complete with battery charger | power supply unit (specific for the country in which it is used), filter holder, connectors set and connection tube (PVC, 2 m).

* Alternatively, a maintenance agreement can be signed. Within the scope of the contractual services, Sartorius Stedim Biotech technicians will carry out a calibration of the MD8 at regular intervals

Specifications for calibration unit

Dimensions	Length, 300 mm (without filter holder), Width, 390 mm with handles Height, 182 mm min., 200 mm max. (adjustable feet)
Connectors	Quick locks (bayonet principle)
Operational life with full battery	Approx. 4 hours
Charge time for empty battery	Approx. 10 hours
Measuring range	1–16 m^3/h
Max. error	1–16 m^3/h, ±2%
Type of protection	IP 40
Allowable ambient temperature	Min. 0°C, max. 40°C
Weight	Approx. 11 kg

Special brochure available on request.
Order no. SL-2028-e

Tubing and connectors set
If the disposable gelatine filter unit is not placed directly at the MD8 airscan®, but at a distance from it, a flexible plastic hose (2 m or 5 m), a connectors set and, if not available, a holder (tripod 16970, double socket 16976, clamp 17037) are necessary for the connection between filter and MD8 airscan®. The autoclavable silicone hose is used instead of the flexible plastic hose, if the MD8 airscan® has to be used in sterile rooms, operating rooms, isolators, blow-fill-seal machines, etc. With this hose attached to the air outlet connector (exhaust), the waste air can be led off into another room.

Case
A stable case for the transport and the storage of a MD8 airscan®, incl. accessories.

Aluminium stack
It consists of a middle part, 10 numbered filter holders and 2 end caps. The stack is first sterilized (by 180°C dry heat, 2 h), and then equipped with the filters under sterile conditions (LF cleanbench). The prepared filter holders are put on one side of the middle part. After removing the sample, the inserted filter holders are put on the other side of the middle part, so that used and unused filter holders are separated from each other.

Accessories for isolator application
For the monitoring of isolators with MD8 airscan®, we recommend using stainless steel accessories such as adapters 17016 (DN25) or 17030 (DN30), clamps 17033 for sanitary flanges, connector 17659---001 or 17659---003 (for tri clamp) and the filter holder for gelatine filter disposables 17801---001 as well as a Sartofluor capsule with PTFE membrane and sanitary flange inlet and outlet, for sterile air filtration inserted between the MD8 airscan® and isolator. This construction makes it possible that the MD8 air sampler remains outside the critical work area (the barrier function between different clean-room classes is maintained).

Accessories for remote control function
Users of the MD8 airscan® now have the possibility of operating this air sampler from a distance, using either of two remote control configurations:
a) Via a PC (with Microsoft 95/98 or higher) with MD8 airscan® dialog system and cable connection to the MD8 airscan® (1ZE---0004).
b) Via a PLC interface unit (1ZE---0003).

Gelatine membrane filter, 80 mm, sterile, pack of 50 for use with stack
Gelatine membrane filters are still available as 80 mm filter discs, suitable for the filter holder supplied with the MD8 airscan®. The filters are sterile-supplied, but the filter holders have to be sterilized by dry heat (180°C, 2h) and then equipped with the filters under sterile conditions. For performing routine check-ups, a stack is recommended in this case.

Further consumables for air monitoring
If gelatine filters cannot be used (high humidity, high temperature), it is recommended to use cellulose nitrate filters.

Accessories for the MD8 air samplers

Order numbers	
16756	Calibration unit for the MD8 air samplers
17208	Case for MD8 airscan®
17656	Aluminium stack for MD8 air samplers

Replacement parts for the stack

Order numbers	
17655	Individual filter holders for gelatine filter type 12602--80----ALK
17660	Middle part
17661	End cap

Tubing and connectors set

Order numbers	
17085	Flexible PVC hose with reinforced ends (2 m)
17088	Flexible PVC hose with reinforced ends (5 m)
17662	Silicone tubing, sterilizable (1 m, state length required)
17657	Set of connectors (consisting of 17658 and 17659), aluminium
17658	Connector (air sampler inlet to flexible hose), aluminium
17659	Connector (flexible hose to filter holder | adapter), aluminium

Accessories for isolator application

Order numbers	
17016	Adapter (DN 25 hose barb to 1" – 1 1/2" sanitary flange) to connect MD8 airscan® to an isolator via silicone tubing and a filter capsule, stainless steel
17030	Adapter (DN 30 hose barb to 1" – 1 1/2" sanitary flange) to connect MD8 airscan® to an isolator via flexible PVC hose and filter capsule, stainless steel
17033	Clamp for 1" – 1 1/2" sanitary flanges, stainless steel
17659---001	Connector (flexible hose to filter holder | adapter), hose nipple, stainless steel
17659---003	Connector (flexible hose to filter holder | adapter), tri clamp, stainless steel
17801---001	Adapter for gelatine filter disposables, stainless steel
5181307T9-----SS	Sartofluor Capsule with PTFE membrane and sanitary flange inlet and outlet, for sterile air filtration inserted between the MD8 airscan® and isolator

Accessories for remote control function

Order numbers	
1ZE---0003	Remote control (Interface) for MD8 airscan® designed for PLC units
1ZE---0004	Remote control for MD8 airscan® for use with PC (dialog system software)

Consumables used with stack
Gelatine disc filters, 3 µm pore size, 80 mm, 50 pieces/pack

Order numbers	
12602-080 ALK	Gelatine disc filter, sterile, sealed in units of five each in a polyethylene bag

Further consumables for air monitoring
Cellulose nitrate membrane filters, 80 mm diameter, 100 pieces/pack

Order numbers	
11404--80----ALN	Cellulose nitrate membrane filters, 0.8 µm, white with black grid, presterilized in bags of 5
13004--80----ALN	Cellulose nitrate membrane filters, 0.8 µm, gray with white grid, presterilized in bags of 5
11301--80----ALN	Cellulose nitrate membrane filters, 8 µm, white no grid, presterilized in bags of 5

Gridded Membrane Filters from Cellulose Nitrate (Cellulose Ester) acc. to ISO Standards, Sterile and Individually Packaged, for Colony Counting

Sterile, individually packed filters have long become standard for routine microbiological quality control because of the user benefits they offer.

They are presterilized and ready-to-use and save preparatory time. As they are individually packed, they avoid the possibility of contamination of remaining filters in opened packs and conform with GLP, having filter identification and lot number printed on each individual envelope.

The increasing demand on these filters required the construction of a new packaging machine with ultra-modern stamping. Each membrane is checked to ensure it is not damaged in any way, is positioned correctly with no slippage under the edge seal, has perfect grid printing and is free of particles. Each envelope is checked for readable lettering. Quality control par excellence!

These membrane filters are in accordance with the following norms: ISO 7704, ISO 7899-2, ISO 8199, ISO 9308-1 and EN 12780. In addition to this they have been manufactured for use especially at the same time with Sartorius Stedim Biotech Nutrient Pads in accordance with the AFNOR (French Standards), the American Petroleum Institute, the American Society for Microbiology, the APHA Standard Methods, the Association of Official Analytical Chemists, the British Drinking Water Guideline, the British Standards, the DGHM (German Association of Hygiene and Microbiology), the DIN Guidelines (German Standards), the European Brewery Community, the European Drinking Water Guideline 98/83, the European Pharmacopoeia, the German Pharmacopoeia, the International Commission for Uniform Methods of Sugar Analysis, the International Dairy Federation, the International Fruit Juice Producers, the ISO Guidelines, the LMBG (German food law), the method described by Lanaridris & Lafon-Lafourcade, the method described in the journal of Food Protection, the method described in the journal of the Institute of Brewing, the methods of the Central European Brewery Commission, the MNO (Mineral|Table Water Guideline), the National Canners Association, the testing procedures for packaging stuff, the U.S. Environmental Protection Agency, the United States Pharmacopoeia, the US Department of Agriculture, the VLB (German Institute of Brewery), the Zentralblatt für Hygiene (Journal of Hygiene), the US Federal Drug Administration and Internal Standard Operation Procedures.

Specifications

The membrane filters
All membranes are made of cellulose nitrate, a material which assures effective retention with high flow rates and optimum colony growth. The printed grid with a size of 3.1 × 3.1 mm makes the counting easier, especially for higher bacteria counts and for microcolonies, but does not influence the growth. The various filter colors allow the best contrast to the colonies and particles.

High flow membranes
The standard membrane filter for microbiological analysis is an 0.45 µm filter. One special variant is the High Flow membrane. It provides 30% higher flow rates in comparison to traditional 0.45 µm membranes. The special pore structure of the new 0.45 µm HighFlow membrane filters allows shorter filtration times due to higher flow rates and throughputs. As every Sartorius Stedim Biotech 0.45 µm membrane filter lot, these membranes are also tested and released according to ISO 7704.

Additional membrane filters
Cellulose nitrate (cellulose ester) membrane filters, gridded, non-sterile packaged (page 18).

Cellulose nitrate (cellulose ester) and cellulose acetate membrane filters, white, individually, sterile packaged (page 20).

Hydrophobic edge membranes are used mainly in the sterility testing of solutions containing antibiotics (page 22).

Microsart® e.motion Dispenser

Fully automated membrane filter dispenser for individually sterile cellulose nitrate filter discs.

The membrane filters are automatically removed from their sterile package – either in a touch-free mode via an optical sensor or at the touch of a button. A pedal switch can be optionally connected to the dispenser. Thanks to their new motorized traction roller, each filter is quickly and reliably dispensed. Membranes that accidentally slide out of their packaging or that even get damaged in the process are now problems of the past.

The controller specially developed for the Microsart® e.motion prevents unwanted dispensing of several membrane filters at a time – it's simple, "fail-safe," and fast.

The clear, compact design of the dispenser allows quick and easy cleaning. The Microsart® e.motion has an interface port available so that other sensor systems can be connected to control the dispenser. The dispenser's low weight makes it easy to transport. Both its functions and design are ideal, giving you the versatility and flexibility you need in your lab.

Applications
Membrane filters for colony counting, particle testing and microscopy

Some of the advantages you will benefit from when using the Microsart® e.motion dispenser:
- Fully automated membrane filter dispenser
- Works hands-free by an optical sensor
- Works by touch button
- Compact design
- Rapid and reliable transport due to sprocket feed roll technology
- Easy insertion of the filter band
- Easy-to-clean

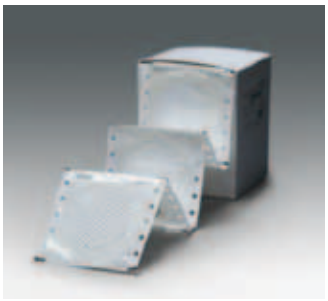
Specifications of the Microsart® e.motion dispenser

Dimensions (L×H×W) in mm	204×213×165
Weight	2.9 kg
Operating voltage	110 V/230 V optional
Frequency	50–60 Hz
Max. power	Consumption 10 W
Dispensing speed	0.5 sec
Dispenser delay	5 sec
Certificates	CE Mark and EMC Directive, European Standards EN 50081-1 and –2, EN 50082-1 and -2, EN 61010

Order number for Microsart® e.motion dispenser

16712	Microsart® e.motion dispenser, fully automated membrane filter dispenser.
1ZE---0028	Pedal (foot switch) for Microsart® e.motion dispenser

Microsart® e.motion Membrane Filters



The membrane filter band specially designed for the Microsart® e.motion can be conveniently inserted, and changed easily and rapidly as needed, even without having to completely use up a complete package quantity. Each box contains 100 membrane filters individually sealed on a special pleated band, and is designed so that it is easy to open and seal for storage. Microsart® e.motion – reliable help in your lab.

Some of the advantages you will benefit from when using the Microsart® e.motion membrane filters:
- Outstanding recovery rates for microorganisms
- 0.45 µm are acc. to ISO 7704
- Multi-fit: Fits into various dispensers
- Protective paper-free
- Packaged on a special pleated band
- Product data are printed on
- High Flow membranes available
- Gamma irradiated, 25kGray

Specifications
Please refer to the membrane type: Cellulose nitrate (cellulose ester), gridded, individually, sterile packaged

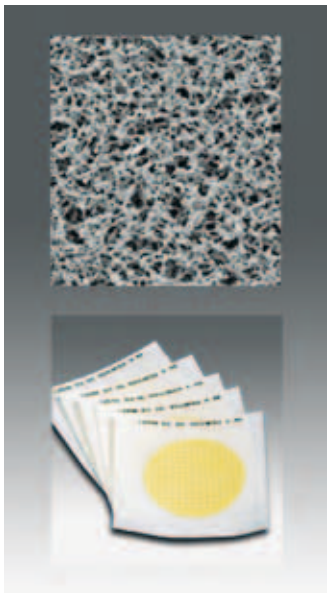
Order numbers for Microsart® e.motion Membrane Filters
Diameter 47 mm or 50 mm, in pack of 3 × 100 membranes, individually, sterile packaged, without protective paper

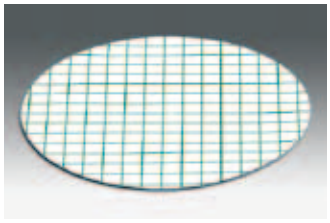
White | black	11407Z-47----SCM	0.2 µm
White | black	11407Z-50----SCM	0.2 µm
White | black	114H6Z-47----SCM	0.45 µm High Flow
White | black	114H6Z-50----SCM	0.45 µm High Flow
White | black	11406Z-47----SCM	0.45 µm
White | black	11406Z-50----SCM	0.45 µm
White | black	11403Z-47----SCM	1.2 µm
White | black	11403Z-50----SCM	1.2 µm
White | green	139H6Z-47----SCM	0.45 µm High Flow
White | green	13906Z-47----SCM	0.45 µm
White | green	13906Z-50----SCM	0.45 µm
Green | dark green	13806Z-47----SCM	0.45 µm
Green | dark green	13806Z-50----SCM	0.45 µm
Gray* | white	130H6Z-50----SCM	0.45 µm High Flow
Gray* | white	13006Z-47----SCM	0.45 µm
Gray* | white	13006Z-50----SCM	0.45 µm
Gray* | white	13005Z-47----SCM	0.65 µm
Gray* | white	13005Z-50----SCM	0.65 µm
Gray* | white	13004Z-47----SCM	0.8 µm
Gray* | white	13004Z-50----SCM	0.8 µm

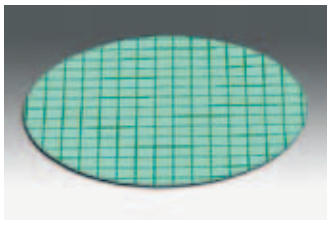
* Gray membranes after wetting black

Microsart® e.motion Membrane Filters are also available together with Nutrient Pads.

Cellulose Nitrate (Cellulose Ester) Membrane Filters, Gridded, Individually, Sterile Packaged







Applications
Membrane filters for colony counting, particle testing and microscopy

Some of the advantages you will benefit from when using this type of membrane filter:
- Outstanding recovery rates for microorganisms
- 0.45 µm are acc. to ISO 7704
- High Flow membranes available
- Three different colors available
- Certified quality
- Gamma irradiated, 25kGray

Specifications

Design	47 or 50 mm in diameter, white, grey or green and gridded
Growth Promotion Test acc. to ISO 7704	– No enhancement or inhibition by the grid lines – No enhancement or inhibition due to chemical extractables – No enhancement or inhibition by the sterilization process
Sterility test	Sterile
Thermal resistance	130°C max.
Thickness acc. to DIN 53105	115–145 µm
Chemical compatibility	Aqueous solutions (pH 4-8), hydrocarbons and several other organic solvents. Detailed information in section "Chemical Compatibility" under Cellulose Nitrate type 113 (page 58).

Typical performance rates for various pore sizes

Pore size		0.2 µm*	0.45 µm**	0.45 µm High Flow**	0.65 µm
Flow rate for water per cm^2 at 1 bar acc. to DIN 58355	in ml/min	20	70	100	130
Coliform retention	in %	100	100	100	n. a.
Recovery rate lot-released acc. to ISO 7704	in %	≥ 90	≥ 90	≥ 90	≥ 90

*) Pore size determined by quantitative retention of Brevundimonas diminuta in accordance with the ASTM Document F 838-83 (1993) Standard test method for determining bacterial retention of membrane filters utilized for liquid filtration.
**) Pore size determined by quantitative retention of Serratia marcescens in accordance with the Standard Methods of Water and Waste Water

White membrane with black grid, for detection of bacteria with dyed media, particle count & microscopy, type 114, individually, sterile packaged

Pore size	Order No.	Diameter	Pack size
0.2 µm	11407--47----ACN	47 mm	100
	11407--47----ACR	47 mm	1,000
	11407--50----ACN	50 mm	100
	11407--50----ACR	50 mm	1,000
0.45 µm	11406--47----ACN	47 mm	100
	11406--47----ACR	47 mm	1,000
	11406--50----ACN	50 mm	100
	11406--50----ACR	50 mm	1,000
0.45 µm High Flow*	114H6--47----ACN	47 mm	100
	114H6--47----ACR	47 mm	1,000
	114H6--50----ACN	50 mm	100
	114H6--50----ACR	50 mm	1,000
0.65 µm	11405--47----ACN	47 mm	100
	11405--50----ACN	50 mm	100
0.8 µm	11404--47----ACN	47 mm	100
	11404--47----ACR	47 mm	1,000
	11404--50----ACN	50 mm	100
1.2 µm	11403--47----ACN	47 mm	100
	11403--47----ACR	47 mm	1,000
	11403--50----ACN	50 mm	100
	11403--50----ACR	50 mm	1,000

White membrane with green grid, for detection of bacteria with dyed media, particle count and microscopy, type 139, individually, sterile packaged

0.45 µm	13906--47----ACN	47 mm	100
	13906--47----ACR	47 mm	1,000
	13906--50----ACN	50 mm	100
	13906--50----ACR	50 mm	1,000
0.45 µm High Flow*	139H6--47----ACN	47 mm	100
	139H6--47----ACR	47 mm	1,000
	139H6--50----ACN	50 mm	100
0.65 µm	13905--47----ACN	47 mm	100
1.2 µm	13903--47----ACN	47 mm	100

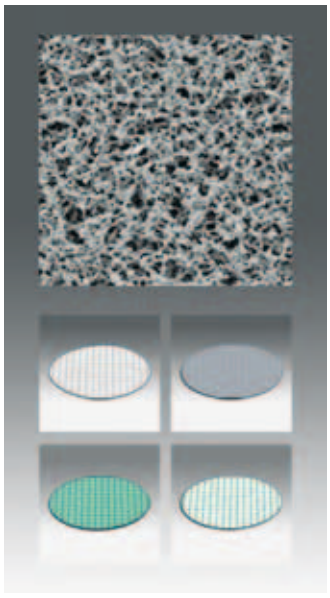
Green membrane with dark-green grid, providing optimal contrast to light-colored or transparent bacteria colonies, type 138, individually, sterile packaged

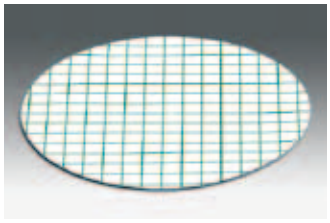
0.45 µm	13806--47----ACN	47 mm	100
	13806--47----ACR	47 mm	1,000
	13806--50----ACN	50 mm	100
	13806--50----ACR	50 mm	1,000

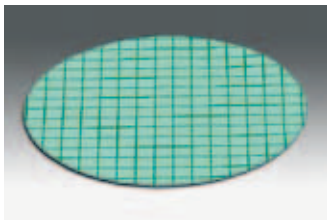
Gray membrane (after wetting, black) with white grid, for detection of yeasts and molds, particle count and microscopy, type 130, individually, sterile packaged

0.45 µm	13006--47----ACN	47 mm	100
	13006--47----ACR	47 mm	1,000
	13006--50----ACN	50 mm	100
	13006--50----ACR	50 mm	1,000
0.65 µm	13005--47----ACN	47 mm	100
	13005--50----ACN	50 mm	100
	13005--50----ACR	50 mm	1,000
0.8 µm	13004--47----ACN	47 mm	100
	13004--47----ACR	47 mm	1,000
	13004--50----ACN	50 mm	100

Cellulose Nitrate (Cellulose Ester) Membrane Filters, Gridded, Non-Sterile Packaged







Applications
Membrane filters for colony counting, particle testing and microscopy

Some of the advantages you will benefit from when using this type of membrane filter:
- Outstanding recovery rates for microorganisms
- 0.45 µm are acc. to ISO 7704
- Three different colors available

Specifications

Design	25, 47 or 50 mm in diameter, white, grey or green and gridded
Growth Promotion Test acc. to ISO 7704	– No enhancement or inhibition by the grid lines – No enhancement or inhibition due to chemical extractables
Thermal resistance	130°C max.
Thickness acc. to DIN 53105	115–145 µm
Chemical compatibility	Aqueous solutions (pH 4-8), hydrocarbons and several other organic solvents. Detailed information in section "Chemical Compatibility" under Cellulose Nitrate type 113 (page 58).

Typical performance rates for various pore sizes

Pore size		0.2 µm*	0.45 µm**	0.65 µm
Flow rate for water per cm^2 at 1 bar acc. to DIN 58355	in ml/min	20	70	130
Coliform retention	in %	100	100	n. a.
Recovery rate lot-released acc. to ISO 7704	in %	≥ 90	≥ 90	≥ 90

*) Pore size determined by quantitative retention of Brevundimonas diminuta in accordance with the ASTM Document F 838-83 (1993) Standard test method for determining bacterial retention of membrane filters utilized for liquid filtration.
**) Pore size determined by quantitative retention of Serratia marcescens in accordance with the Standard Methods of Water and Waste Water

White membrane with black grid, for detection of bacteria with dyed media, particle count & microscopy, type 114, non-sterile

Pore size	Order No.	Diameter	Pack size
0.2 µm	11407--25------N	25 mm	100
	11407--47------N	47 mm	100
	11407--47------R	47 mm	1,000
	11407--50------N	50 mm	100
0.45 µm	11406--25------N	25 mm	100
	11406--47------N	47 mm	100
	11406--47------R	47 mm	1,000
	11406--50------N	50 mm	100
	11406--50------R	50 mm	1,000
0.65 µm	11405--47------N	47 mm	100
0.8 µm	11404--25------N	25 mm	100
	11404--47------N	47 mm	100
	11404--50------N	50 mm	100
1.2 µm	11403--25------N	25 mm	100
	11403--47------N	47 mm	100
	11403--50------N	50 mm	100

White membrane with green grid, for detection of bacteria with dyed media, particle count and microscopy, type 139, non-sterile

0.45 µm	13906--47------N	47 mm	100
	13906--47------R	47 mm	1,000
	13906--50------N	50 mm	100
	13906--50------R	50 mm	1,000

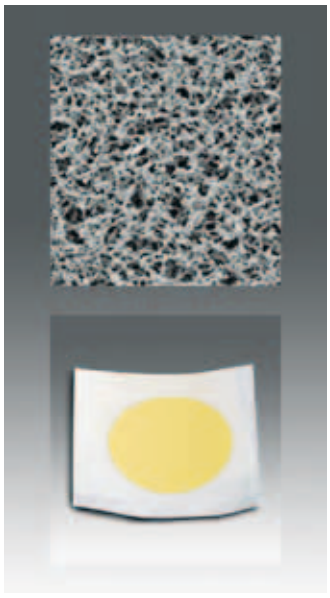
Green membrane with dark-green grid, providing optimal contrast to light-colored or transparent bacteria colonies, type 138, non-sterile

0.45 µm	13806--47------N	47 mm	100
	13806--47------R	47 mm	1,000
	13806--50------N	50 mm	100
	13806--50------R	50 mm	1,000

Gray membrane (after wetting, black) with white grid, for detection of yeasts and molds, particle count and microscopy, type 130, non-sterile

0.45 µm	13006--25------N	25 mm	100
	13006--47------N	47 mm	100
	13006--47------R	47 mm	1,000
	13006--50------N	50 mm	100
0.65 µm	13005--47------N	47 mm	100
	13005--50------N	50 mm	100
0.8 µm	13004--47------N	47 mm	100
	13004--50------N	50 mm	100

Cellulose Nitrate (Cellulose Ester) and Cellulose Acetate Membrane Filters, White, Individually, Sterile Packaged



Sterile, individually packed filters have long become standard for routine microbiological quality control because of the user benefits they offer. They are presterilized and ready-to-use and save preparatory time. As they are individually packed, they avoid the possibility of contaminating remaining filters in opened packs and conform with GLP, having filter identification and lot number printed on each individual envelope.

Materials
The membranes are made of even cellulose nitrate (cellulose ester), a material which assures effective retention with high flow rates and optimum colony growth or cellulose acetate, a material which combines high flow rates and thermal stability with very low adsorption characteristics.

Additional applications
11301, a white CN membrane filter with a pore size of 8 µm is used as a prefilter in a special prefilter attachment (16807) for bacteriological analyses. It retains the coarse suspended particles, whereas it allows microorganisms to pass through. These microbes are trapped on the surface of the underlying bacteria-retentive membrane filter (e. g. 0.45 µm).

11107, a white CA membrane filter with a pore size of 0.2 µm is the filter of choice for sterile filtration, such as nutrient media, buffer and sera. This membrane is validated by the Bacteria Challenge Test.

Applications
Membrane filters for colony counting, sterility testing, particle testing and microscopy

Some of the advantages you will benefit from when using this type of membrane filter:
- Outstanding recovery rates for microorganisms
- Defined particle retention
- 0.45 µm are acc. to ISO 7704
- 0.2 µm are validated by BCT
- Certified quality
- Gamma-irradiated, 25kGray

Specifications

Design	25, 47 or 50 mm in diameter, white
Growth Promotion Test acc. to ISO 7704	– No enhancement or inhibition by the sterilization process – No enhancement or inhibition due to chemical extractables
Sterility test	Sterile
Thermal resistance	CN: 130°C max. | CA: 180°C max.
Thickness acc. to DIN 53105	CN: 115 – 145 µm | CA: 120 µm (average value)
Chemical compatibility	Aqueous solutions (pH 4–8), hydrocarbons and several other organic solvents. Detailed information in section "Chemical Compatibility" under Cellulose Nitrate type 113 and Cellulose Acetate type 111 (page 58).

Cellulose nitrate membrane filters, white, for colony counting, sterility testing, particle count & microscopy, type 113, individually, sterile packaged

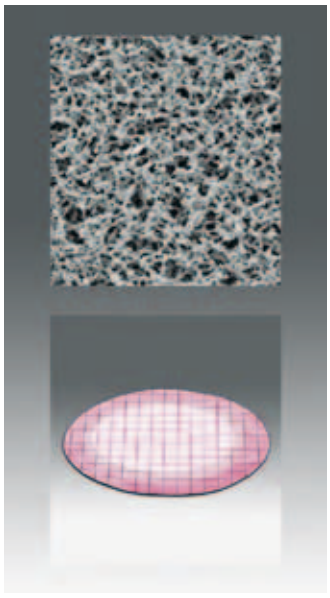
Pore size	Order No.	Diameter	Pack size
0.45 µm	11306--25----ACN	25 mm	100
	11306--47----ACN	47 mm	100
	11306--50----ACN	50 mm	100
0.65 µm	11305--47----ACN	47 mm	100
	11305--50----ACN	50 mm	100
0.8 µm	11304--47----ACN	47 mm	100
	11304--50----ACN	50 mm	100
1.2 µm	11303--47----ACN	47 mm	100
	11303--50----ACN	50 mm	100
3 µm	11302--47----ACN	47 mm	100
	11302--50----ACN	50 mm	100
8 µm	11301--47----ACN	47 mm	100
	11301--50----ACN	50 mm	100

Cellulose acetate* membrane filters, white, for colony counting, sterility testing, particle count & microscopy, type 111, individually, sterile packaged

0.2 µm	11107--47----ACN	47 mm	100
	11107--50----ACN	50 mm	100
0.45 µm	11106--47----ACN	47 mm	100
	11106--50----ACN	50 mm	100

* If cellulose nitrate is not compatible

Hydrophobic Edged Cellulose Nitrate (Cellulose Ester), Cellulose Acetate and Regenerated Cellulose Membrane Filters, Individually, Sterile Packaged & Non-Sterile



Hydrophobic edge membranes are used mainly for colony counting and sterility testing of solutions containing substances with antibiotic characteristics. The hydrophobic edge avoids the penetration of any growth-inhibitory substance into the membrane clamp zone wherefrom it could not be rinsed out and the substance could inhibit microbial growth during incubation.

Materials
The membranes are available in three different materials:
- Cellulose nitrate (cellulose ester), a material which assures effective retention with high flow rates and optimum colony growth
- Cellulose acetate, a material which combines high flow rates and thermal stability with very low adsorption characteristics
- Regenerated cellulose, a material which combines excellent chemical resistance and thermal stability with very low adsorption characteristics.

Applications
Membrane filters for colony counting and sterility testing

Some of the advantages you will benefit from when using this type of membrane filter:
- Outstanding retention rates for microorganisms
- 0.45 µm are acc. to ISO 7704
- 0.2 µm are validated by BCT
- Certified quality

Specifications

Design	25, 47 or 50 mm in diameter, white or white with black grid
Growth Promotion Test acc. to ISO 7704	– No enhancement or inhibition by the grid lines – No enhancement or inhibition due to chemical extractables – No enhancement or inhibition by the sterilization process
Sterility test	Sterile
Thermal resistance	CN: 130°C max. | CA and RC: 180°C max.
Thickness acc. to DIN 53105	CN: 115–145 µm | CA: 120 µm (average value) | RC: 160–200 µm
Chemical compatibility	Aqueous solutions (pH 4–8), hydrocarbons and several other organic solvents, RC is resistant to almost all solvents and is compatible in a pH-range of 3-12. Detailed information in section "Chemical Compatibility" under Cellulose Nitrate type 113, page 58, Cellulose Acetate type 111 and Regenerated Cellulose type 184.

Cellulose nitrate membrane filters, white with black grid, 3 mm hydrophobic edge, for colony counting & sterility testing, type 131, individually, sterile packaged

Pore size	Order No.	Diameter	Pack size
0.2 µm	13107--47----ACN	47 mm	100
	13107--50----ACN	50 mm	100
0.45 µm	13106--47----ACN	47 mm	100
	13106--50----ACN	50 mm	100

Cellulose nitrate membrane filters, white with black grid, 6 mm hydrophobic edge, for colony counting & sterility testing, type 131, individually, sterile packaged

0.45 µm	13106--47----HEN	47 mm	100

Cellulose nitrate membrane filters, white with black grid, 3 mm hydrophobic edge, for colony counting & sterility testing, type 131, non-sterile

0.2 µm	13107--25------N	25 mm	100
	13107--47------N	47 mm	100
	13107--50------N	50 mm	100
0.45 µm	13106--25------N	25 mm	100
	13106--47------N	47 mm	100
	13106--50------N	50 mm	100
8 µm	13101--47------N	47 mm	100
	13101--50------N	50 mm	100

Cellulose nitrate membrane filters, white, 3 mm hydrophobic edge, for colony counting & sterility testing, type 131, non-sterile

8 µm	13101--50----AHN	50 mm	100

Cellulose nitrate membrane filters, white with black grid, 6 mm hydrophobic edge, for colony counting & sterility testing, type 131, non-sterile

0.2 µm	13107--47----HCN	47 mm	100
0.45 µm	13106--47----HCN	47 mm	100

Cellulose acetate* membrane filters, white with black grid, 3 mm hydrophobic edge, for colony counting & sterility testing, type 135, individually, sterile packaged

0.2 µm	13507--47----ACN	47 mm	100
0.45 µm	13506--47----ACN	47 mm	100
	13506--50----ACN	50 mm	100

Cellulose acetate* membrane filters, white with black grid, 3 mm hydrophobic edge, for colony counting & sterility testing, type 135, sterile, packaged of 10 discs per sleeve

0.45 µm	13506--47----ALS	47 mm	100

Cellulose acetate* membrane filters, white with black grid, 3 mm hydrophobic edge, for colony counting & sterility testing, type 135, non-sterile

0.2 µm	13507--47------N	47 mm	100
0.45 µm	13506--47------N	47 mm	100

Cellulose acetate* membrane filters, white with black grid, 6 mm hydrophobic edge, for colony counting & sterility testing, type 135, non-sterile

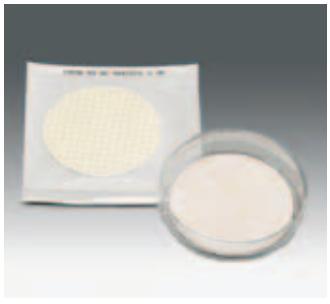
0.45 µm	13506--47----HCN	47 mm	100

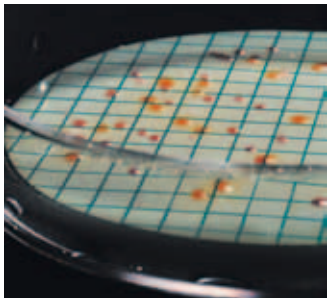
Regenerated cellulose* membrane filters, white, hydrophobic edged, for colony counting & sterility testing, type 184, 100 membranes per box, individually, sterile packaged

0.45 µm	18406--47----ACN	47 mm	3 mm hydropho. edge
	18406--47----HDN	47 mm	4 mm hydropho. edge

* If cellulose nitrate is not compatible

Nutrient Pad Sets – Dehydrated Media Pads in Petri Dishes, with Matching Membrane Filters for Economical, Time-saving Microbiological Quality Control





Sartorius Stedim Biotech Nutrient Pad Sets have been used successfully in the membrane filter method for 20 years. Practical and easy to handle, they reduce labor and simplify many microbiological testing procedures.

Nutrient pads are sterile, dehydrated culture media. Once they are moistened with 3.0–3.5 ml of sterile and demineralized (or distilled) water they are ready to use immediately.

Ready-to-use up to 24 months
The standard NPS box contains 100 sterile nutrient pads, each of which is individually inserted in a petri dish and sterilized. Ten each of these petri dishes are sealed in an aluminum bag. This special packaging in bags protects the sensitive formula constituents of the nutrient pads during transport and storage from fluctuations in humidity and temperature. As a result, it guarantees the high quality of our NPS throughout their entire shelf life up to 24 months. This makes the Sartorius Stedim Biotech Nutrient Pads Sets unique: No other ready-to-use culture media around the globe assures such consistently high quality and reproducible results up to 24 months.

Compliance with International Standards
Currently, Sartorius Stedim Biotech offers more than 30 different Nutrient Pad Set types to meet the diverse objectives of microbiological analysis. Aside from the European drinking water directive, they comply with other international regulations and recommendations: international pharmacopoeias, DIN and ISO standards, the American Standards for Water and Foods, mineral water regulations, brewery guidelines, such as MEBAC or EBC, and recommendations of the food industry, such as LMBG, NCA and ICUMSA, etc.

By-packed membranes
All Nutrient Pad Set types are supplied with the appropriate membrane filters, which are also presterilized and individually packaged. The membrane filters tailored to meet the special requirements of microbial detection are available with 47 mm or 50 mm diameters.

Benefits for the user

Economy
No time-consuming and labor-intensive preparation of the nutrient media (sterilization, cleaning, etc.).

Easy handling
Nutrient Pad Sets can also be used in laboratories without comprehensive microbiological equipment.

Consistently quality
During the production, each nutrient pad set batch is compared with the corresponding agar medium, in order to guarantee consistently quality and reproducible results.

Trouble-free storage
Nutrient Pad Sets can be stored at room temperature in a warehouse, up to 24 months.

Order numbers for nutrient pad sets in petri dishes

Nutrient Pad Sets for total colony counting, individually, sterile packaged in petri dishes, 100 per box, with 100 individually, sterile packaged 47 mm membrane filters

Determination of	NPS type (Filter type)[1]	Order No.[2]
Total count	Caso (1)	14063--47------N
Total count	R2A (1)	14084--47------N
Total count	Standard TTC (1)	14055--47------N
Total count	Standard TTC I mod. (1)	14085--47------N
Total count	Standard (1)	14064--47------N
Total count	TGE (1) | Tryptone Glucose Extract	14076--47------N
Total count	Yeast Extract (1)	14090--47------N

Nutrient Pad Sets for E. coli, coliforms and enterobacteria, individually, sterile packaged in petri dishes, 100 per box, with 100 individually, sterile packaged 47 mm membrane filters

E. coli and coliforms	Chromocult (7)	14087--47------N
E. coli	ECD (2)	14082--47------N
E. coli and coliforms	Endo (9)	14053--47------N
Enterobacteria, E. coli	MacConkey (2)	14097--47------N
E. coli and coliforms	m FC (2)	14068--47------N
E. coli and coliforms	m FC in closed petri dishes (2)	14068--50----PDN
E. coli and coliforms	Teepol | Lauryl Sulphate (2)	14067--47------N
E. coli and coliforms	Tergitol TTC (2)	14056--47------N

Nutrient Pad Sets for other faecal bacteria, individually, sterile packaged in petri dishes, 100 per box, with 100 individually, sterile packaged 47 mm membrane filters

Enterococci	Azide (1) | KF Strep	14051--47------N
Salmonellae	Bismuth Sulfite (1)	14057--47------N

Nutrient Pad Sets for non-faecal, pathogenic bacteria, individually, sterile packaged in petri dishes, 100 per box, with 100 individually, sterile packaged 47 mm membrane filters

Pseudomonas aeruginosa	Cetrimide (2)	14075--47------N
Staphylococci, Staph. aureus	Chapman (2)	14074--47------N

Nutrient Pad Sets for yeasts and molds, individually, sterile packaged in petri dishes, 100 per box, with 100 individually, sterile packaged 47 mm membrane filters

Determination of	NPS type (Filter type)[1]	Order No.[2]
Wild yeasts	Lysine (3)	14061--47------N
Yeasts and molds	Malt Extract (8)	14086--47----CCN
Yeasts and molds	Malt Extract (6)	14086--47------N
Yeasts and molds	Sabouraud (10)	14069--47------N
Yeasts and molds	Schaufus Pottinger | m green yeast and mold (4)	14070--47------N
Yeasts and molds	Schaufus Pottinger | m green yeast and mold (5)	14072--47------N
Yeasts and molds	Schaufus Pottinger | m green yeast and mold (6)	14080--47------N
Yeasts and molds	Schaufus Pottinger | m green yeast and mold (3)	14083--47------N
Yeasts and molds	Schaufus Pottinger | m green yeast and mold (8)	14091--47------N
Yeasts and molds and bacteria	Wallerstein Nutrient | WL Nutrient (2)	14089--47------N
Yeasts and molds	Wort (3)	14058--47------N

Nutrient Pad Sets for product-spoiling microorganisms, individually, sterile packaged in petri dishes, 100 per box, with 100 individually, sterile packaged 47 mm membrane filters

Thermophilic spore formers and mesophilic bacteria	Glucose Tryptone (2)	14066--47------N
Leuconostoc oenos and other wine-spoiling organ.	Jus de Tomate | Tomato Juice (1)	14079--47------N
Lactobacilli and other soft drink-spoiling microorganisms	MRS (1)	14077--47------N
Acid-tolerant microorganisms	Orange Serum | pH 5.5 (1)	14062--47------N
Acid-tolerant microorganisms	Orange Serum | pH 3.2 (6)	14096--47------N
Lactobacilli and Pediococci and other beer-spoiling microorganisms	VLB-S7-S (2)	14059--47------N
Mesophilic slime-forming bacteria esp. Leu. mesenteroides	Weman (1)	14065--47------N

Nutrient Pad Sets starter kit, individually, sterile packaged in petri dishes, 100 per box, with 100 individually, sterile packaged 47 mm membrane filters

E. coli and coliforms, total count, yeasts and molds	Mixed types: Endo, Standard, Wort (1, 2, 3)	14095--47------N

Sterile water in ampoules, for moistening NPS, 3.5 ml each, 100 per box	
100 ampoules with sterile water	1ZZ–K0001

Special brochure available on request f.o.c. Order no. SM-4017-e.

1) The membrane filters are selected for optimum growth, together with the corresponding nutrient media. The supplied membrane filter type is listed within brackets:
   (1) = Green with dark-green grid, 0.45 µm pore size
   (2) = White with green grid, 0.45 µm pore size
   (3) = Gray (after wetting black) with white grid, 0.65 µm pore size
   (4) = White with green grid, 0.65 µm pore size
   (5) = White with green grid, 1.2 µm pore size
   (6) = Gray (after wetting black) with white grid, 0.8 µm pore size
   (7) = White with black grid, 0.45 µm pore size
   (8) = Gray (after wetting black) with white grid, 0.45 µm pore size
   (9) = White with green grid, 0.45 µm pore size, High Flow
   (10) = Gray (after wetting black) with white grid, 0.45 µm pore size, High Flow

2) Diameter of the membrane filter, 47 mm. Order number for Nutrient Pad Set with 50 mm membrane filter as above, but --47------N replaced by --50------N.

Most of the NPS types are also available with Microsart® e.motion Membrane Filters: Order number as above, but ---N replaced by -RDN.

Other NPS types on request.

Nutrient Pad Set poster
The photo shows a poster, original size 70 cm × 50 cm, with growth patterns and typical applications for the Nutrient Pad Sets, described on the previous page. On request, you can obtain this poster free of charge. Order no. SM-0001-e.

Culture Media in Bottles and Tubes
Absorbent Pads and Petri Dishes

Agar Media
The traditional culture media for microorganisms is agar media. This can be used for the membrane filtration method or for direct incubation. There are two different forms available: Agar media in tubes are for pouring agar plates. The content of one tube is sufficient for two 90 mm or three 60 mm petri dishes. Agar media in bottles are the cost-effective alternative for casting plates.

Liquid broth media
Liquid culture media broth for direct incubation or for wetting an absorbent pad before a membrane filter is placed on it. They are available in tubes and in bottles.

Absorbent pads
Sartorius Stedim Biotech 1.4 mm thick absorbent pads are wetted with the appropriate liquid culture medium before a membrane filter is placed on them. They come presterilized in plastic magazines, which fit onto the Sartorius Stedim Biotech manual dispensing device. The absorbent pads are available in two diameters:
– 47 mm with approx. 3 ml absorption capacity and
– 50 mm with approx. 3.5 ml absorption capacity.

Agar Media in 250 ml bottles, 4 bottles per box

Determination of	Agar type	Order No.
Total count	Nutrient	14144----------A
Yeasts and molds	Wort	14157----------A
Wild yeasts	Lysine	14143----------A
Lactobacilli and Pediococci and other beer-spoiling organisms	VLB-S7-S	14148----------A

Agar Media in 20 ml tubes, 50 tubes per box

Determination of	Agar type	Order No.
Total count	Nutrient	14137----------K
Total count	Standard	14131----------K
Yeasts and molds	Wort	14138----------K
Acid-tolerant microorganisms	Orange serum	14130----------K
Leuconostoc oenos and other wine-spoiling organ.	Jus de tomate (tomato juice)	14140----------K

Lactose broth media, bottled concentrate, for drinking water analysis

Concentration factor	Packaging	Order No.
Two times concentrated	4 bottles à 100 ml	14155----------A

Broth media in 20 ml tubes, 50 tubes per box

Determination of	Broth type	Order No.
Lactobacilli and Pediococci and other beer-spoiling organisms	VLB-S7-S	14127----------K

Absorbent Pads, 47 mm, sterile packaged in 10 magazines, each with 100 pads

Description	Packaging	Order No.
Absorbent Pads, 10 × 100 pads	1,000 per box, incl. one dispenser	15410--47----ALR
Absorbent Pad Set, 10 × 100 pads plus 1,000 membrane filters (0.45 µm, white | green)	1,000 per box, incl. two dispensers	13906--47----APR

Absorbent Pads, 47 mm, sterile packaged of 10 discs per sleeve

Description	Packaging	Order No.
Absorbent Pad Set, 10 × 10 pads in sleeves plus 100 membrane filters (0.2 µm, white | black)	100 per box	13707--47----ALN
Absorbent Pad Set, 10 × 10 pads in sleeves plus 100 membrane filters (0.45 µm, white | black)	100 per box	13706--47----ALN

Absorbent Pads, 50 mm, sterile-packaged in 10 magazines, each with 100 pads

Description	Packaging	Order No.
Absorbent Pads, 10 × 100 pads	1,000 per box, incl. one dispenser	15410--50----ALR

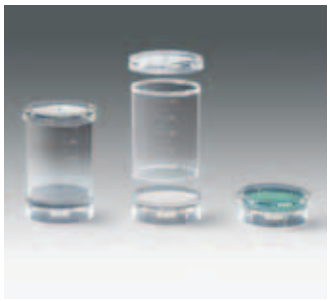
Absorbent Pads, 50 mm, sterile-packaged in petri dishes

Description	Packaging	Order No.
Absorbent Pad Set, 100 pads in petri dishes, sterile packaged	100 per box	15400--50------N
Absorbent Pad Set, 100 pads in petri dishes plus 100 membrane filters (0.45 µm, green | dark green)	100 per box	15400--50----FRN

Disposable petri dishes, auto-sterile, 100 per box

Diameter	Order No.
60 mm	14311--60------N
90 mm	14311--90------N

Biosart® 100 Monitors



The membrane filtration method is the suitable technique for microbiological analysis of pharmaceuticals, water, cosmetics, foods and beverages. The use of ready-to-use disposable units is optimal for these applications.

Biosart® 100 Monitors
Biosart® 100 Monitors have been specifically designed for the detection and enumeration of microorganisms in pharmaceuticals, cosmetics, food, beverages, water and other liquids. These sterile disposables with an incorporated membrane filter and cellulose pad are ready to use. After filtration, just remove the 100 ml funnel to convert the Monitor into a petri dish eliminating the need for membrane manipulation. Culture media for wetting the pad are available in individually sterilized, convenient plastic ampoules. Biosart® 100 Monitors are ready-to-use filter units designed to be placed onto the bases of a vacuum manifold, eliminating the cleaning and sterilization required of reusable funnels.

Compliance with International Standards
The membrane filter method is worldwide accepted and the preferred method of choice for the analysis of microbial contamination in liquid samples. Biosart® 100 Monitors and Media are in compliance with the membrane filtration procedures referenced in the:
- European drinking water directive (Council Directive 98/83/EC on the quality of water)
- Standard Methods for the Examination of Water and Waste Water, 20th edition
- U.S. Environmental Protection Agency, 600/8-78-017.
- International Standard's microbiological methods, such as ISO 7704, ISO 9308-1, EN 12780, ISO 8199
- WHO Guidelines for Drinking Water Quality, 1997
- International Pharmacopoeia, such as the current editions of the USP and EP

High Flow membranes
Biosart® 100 Monitors are also available with the new 0.45 µm High Flow membranes. The special pore structure allows shorter filtration times due to 30% higher flow rates.

Applications
Colony counting, particle testing and microscopy

Some of the advantages you will benefit from when using Biosart® 100 Monitors:

Superior performance
- High flow rate
- High total throughput

Safe & reliable
- Sterile or individually, sterile packaged
- Consistently recovery
- Membranes meet ISO 7704
- Membranes available in various colors
- Without any hydrophobic adhesive areas

Economical
- Ready to connect and easy to use
- Minimal amount of equipment needed

Specifications

Housing	Polystyrene
Membrane filter	Cellulose nitrate (cellulose ester): choice of white, green or grey, with grid; Regenerated cellulose: white; membranes removable for filing
Plug and adapter	Polyethylene
Pad	Cellulose
Capacity	100 ml, 10 ml graduations
Pore size	0.2 µm, 0.45 µm or 0.8 µm
Filter diameter	47 mm
Filtration area	14.5 cm^2
Max. operating pressure	Vacuum only
Outlet	6.5 × 1.5 mm
Lot certificates	Recovery rate, sterility and specifications

Biosart® 100 Monitors, 100 ml, 47 mm, individually packaged, sterile, 48 units

Pore size	Membrane filter* color | grid color	Order No.
0.2 µm	CN white | black	16401-47-07--ACK
0.45 µm	CN white | black	16401-47-06--ACK
0.45 µm	CN green | dark green	16402-47-06--ACK
0.45 µm	CN gray | white**	16403-47-06--ACK

Biosart® 100 Monitors, 100 ml, 47 mm, packaged in trays, sterile, 48 units

0.2 µm	CN white | black	16401-47-07----K
0.45 µm High Flow	CN white | black	16401-47-H6----K
0.45 µm	CN white | black	16401-47-06----K
0.45 µm	CN green | dark green	16402-47-06----K
0.45 µm	CN gray | white**	16403-47-06----K
0.8 µm	CN gray | white**	16403-47-04----K
0.45 µm	RC white	16404-47-06----K

Biosart® 100 Monitors, 100 ml, 47 mm, sterile, 48 units

0.45 µm High Flow	CN white | black	16401-47-H6-V--K
0.45 µm	CN white | black	16401-47-06-V--K
0.45 µm	CN gray | white**	16403-47-06-V--K
0.8 µm	CN gray | white**	16403-47-04-V--K

Biosart® 100 Monitors, 100 ml, 47 mm, sterile, 48 units, membrane fixed
available only in the U.S. and Canada

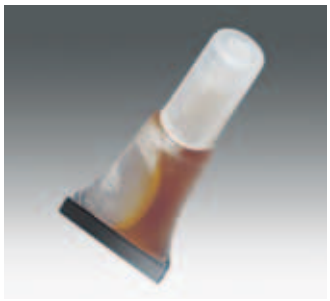
0.45 µm High Flow	CN white | black	16401-47-H6-VWMK
0.45 µm	CN white | black	16401-47-06-VWMK
0.45 µm High Flow	CN gray | white**	16403-47-H6-VWMK
0.45 µm	CN gray | white**	16403-47-06-VWMK

* CN = Cellulose Nitrate (Cellulose ester)
RC = Regenerated Cellulose
** Gray membranes after wetting black

Biosart® 100 Monitor Adapters and Membrane Lifter

Description	Adaptation	Order No.
Biosart® 100 Adapter, silicone	Biosart® 100 Monitor onto Sartorius Stedim Biotech stainless steel frits e. g. 16840 (Combisart® base support) or onto 16841 (individual base)	16414
Biosart® 100 Adapter, polypropylene	Biosart® 100 Monitor onto 50 mm supports	16415
Biosart® 100 Adapter, polypropylene	Biosart® 100 Monitor onto 56 mm supports and vacuum pumps	16416
Biosart® 100 Membrane Lifter, ABS	for easy transfer of the membrane onto agar	16417

Biosart® 100 Nutrient Media



Each box of Biosart® 100 Nutrient Media contains 50 ampoules with sterile media, each with 2.5 ml and a lot certificate. If stored under proper conditions (+4°C), the culture media have a shelf life of 12 month (except for Endo, KF Strep, Lauryl Sulfate and Tergitol which have a 9-month shelf life). Biosart® 100 Nutrient Media comply with international regulations and recommendations: International pharmacopoeias, DIN and ISO standards, the American Standards for Water and Foods, mineral water regulations, guidelines of the food and beverage industries.

Within the scope of the quality assurance procedure and the stringent quality control standards every batch has passed Sartorius Stedim Biotech in-house tests of growth promotion, sterility, physical and technical parameters have been passed successfully. Biosart® 100 Nutrient Media are convenient in use and eliminating the handling of glass ampoules.

Application
Colony counting

Some of the advantages you will benefit from when using Biosart® 100 Media:

Safe & reliable
- Presterilized media
- Certificate of Quality for every batch
- In compliance with international standards
- Consistently recovery

Economical
- Ready-to-use
- Long shelf life

Biosart® 100 Nutrient Media, 2.5 ml, individually, sterile-packaged in ampoules, 50 units

Determination of	Media type	Order No.
Total count	Caso (acc. USP)	16400-02----CA-K
Total count	R2A (acc. EP)	16400-02----RA-K
Total count	TGE | Total Count	16400-02----TC-K
Total count	Total Count TTC	16400-02----TZ-K
E. coli and coliforms	m Endo	16400-02----EN-K
E. coli and coliforms	m FC	16400-02----MF-K
E. coli and coliforms	Lauryl Sulfate | Teepol	16400-02----LS-K
E. coli and coliforms	Tergitol TTC	16400-02----TT-K
Enterococci	KF Strep | Azide	16400-02----KF-K
Pseudomonas aeruginosa	Cetrimide	16400-02----CE-K
Yeasts and molds	Sabouraud (acc. USP)	16400-02----SB-K
Yeasts and molds	m Green yeast and mold | Schaufus Pottinger	16400-02----MG-K
Yeasts and molds	m Green yeast and mold selective	16400-02----GS-K
Yeasts and molds	Wort	16400-02----WZ-K
Yeasts and molds and bacteria	WL Nutrient | Wallerstein Nutrient	16400-02----WN-K
Bacteria in fermentation processes	WL Differential | Wallerstein Differential	16400-02----WL-K
Acid-tolerant microorganisms	Orange Serum	16400-02----OS-K

Microsart® Funnel 100
The sterile disposable funnel with Click-fit

In microbiological quality control, sterility of the equipment used for processing samples is a necessary basic requirement. The re-usable funnels made of stainless steel or other materials which are used for membrane filtration are usually sanitized between samples by flaming or with hot water. Both of these methods can be insufficiently reliable if not properly performed. Alternatively, the funnels can be sterilized by autoclaving, but this is too laborious for routine use. A disposable filter funnel is the ideal combination for reliability and time saving.

Description
Microsart® Funnel 100 are sterile 100 ml plastic funnels. They allow quick performance of the filtration steps required in the routine testing of water, food and beverages, pharmaceutical and cosmetic products.

A Sartorius Stedim Biotech 47 mm gridded membrane is placed on a stainless steel filter support. A Microsart® Funnel is simply and practically fitted on. The sample is filtered.

The funnel is made of polypropylene and thus is elastic enough for optimal sealing with a Click-Fit closure. Graduations are marked at 20, 50 and 100 ml to allow for accurate sample volumes. The large inner diameter ensures a high flow rate. The optimized shape allows thorough rinsing of the system subsequent to filtration. No liquid is retained in the filter funnel.

Combisart® Systems
The Microsart® Funnel Base is the perfect addition to existing Combisart stainless steel manifolds. The slightly recessed frit ensures the plane positioning of the membrane filter. Thus wrinkled membranes, which make the counting of the colony growth difficult, are eliminated. Lateral notches make sure that the membrane can be removed easily after filtration.

Microsart® Funnel Dispenser
The Funnel Dispenser for secure removal of single, sterile Microsart® Funnels has proven itself in practice. Even after opening the bag, the remaining funnels are protected from secondary contamination. The Microsart® Funnel Dispenser is made of high-grade stainless steel, the dispenser opening is made of polypropylene and contains a silicone O-ring. All these materials guarantee reliable autoclaving.

Applications
Colony counting, particle testing and microscopy

Some of the advantages you will benefit from when using Microsart® Funnel 100:
- **Reliable results**
  Use a new, sterile funnel for each test for certain prevention of cross contamination!
- **Time-saving**
  Just change the funnel, rather than spending time sanitizing it!
- **Simpler handling**
  No more holding hot funnels! And, you can see when filtration has been completed, particularly useful when using manifolds in routine testing.

Specifications

Specifications

Material	Polypropylene
Capacity	100 ml, graduations at 20, 50 and 100 ml
Filter diameter	47 mm, prefilter 40 mm (particle testing only)
Filtration area	13.2 cm^2
Max. operating pressure	Vacuum only
Sterilization	Ethylene oxide
Lot certificate	Sterility and performance test

Microsart® Funnel 100, sterile disposable funnel, 100 ml, 100 units

Description	Order No.
Microsart® Funnel 100, sterile in 5 sealed bags	16A07--10------N

Microsart® Funnel Base 47 mm with frit

Microsart® Funnel Base 47 mm with frit, stainless steel, to accommodate Microsart® Funnels onto Combisart® manifolds	1ZU---0002

Accessories and replacement parts

Description	Order No.
Microsart® Funnel Dispenser Funnel dispenser for secure removal of single, sterile Microsart® Funnel	16A08
Replacement frit, stainless steel	1ZU---0001

Further information about Combisart® stainless steel manifolds you will find on the following pages.

Biosart® 250 Funnels

In microbiological quality control, sterility of the equipment used for processing samples is a necessary basic requirement. The reuseable funnels made of stainless steel or other materials which are used for membrane filtration are usually sanitized between samples by flaming or with hot water. Both of these methods can be insufficiently reliable when not properly performed. Alternatively, the funnels could be sterilized by autoclaving, but this is too laborious for routine use. A disposable sterile funnel in a certified quality is the ideal solution.

Description
The Biosart® 250 Funnel has been specifically designed for microbiological and analytical quality assurance. Biosart® 250 are sterile funnels which allows for fast filtration required in the routine testing of pharmaceutical and cosmetic products, water, food and beverages and other liquids. A Sartorius Stedim Biotech gridded membrane is placed on a stainless steel filter support. A Biosart® 250 Funnel is simply fitted on and the sample is filtered. The funnel is made of polypropylene and is sufficiently elastic for optimal sealing with a bayonet-type closure. Graduations are marked at 50, 100, 150, 200 and 250 ml for exact sample volumes. The large inner diameter ensures a high flow rate. The conical form allows a thorough rinsing of the system subsequent to filtration. No liquid is retained in the filter funnel.

Applications
Colony counting, particle testing and microscopy

Some of the advantages you will benefit from when using Biosart® 250 Funnels:

Superior performance
- High flow rate
- High total throughput

Safe & reliable
- Sterile or individually, sterile packaged
- No risk of cross contaminations
- No leakages due to proven closure technique
- No holding of hot funnels
- Visibility of the complete filtration

Economical
- Ready to connect and easy to use
- Minimal amount of equipment needed
- Autoclavable (to a limited extend)

Specifications

Material	Polypropylene
Capacity	250 ml, 50 ml graduations
Filter diameter	47 mm (or 50 mm), prefilter 40 mm
Filtration area	12.5 cm^2
Max. operating pressure	Vacuum only
Sterilization	Ethylene oxide
Lot certificates	Sterility and performance tests

Biosart® 250 Funnels, ready to use filter funnels, 250 ml, 50 units

Description	Order No.
Biosart® 250 Funnel, 50 units, individually, sterile-packaged	16407--25----ACK
Biosart® 250 Funnel, 50 units, sterile-packaged	16407--25----ALK

Further information available on request f.o.c. Order no. SL-3017-e

Combisart® – The Sterile Vented Filter Station
Individual and Multi-Branch Systems

The Sartorius Stedim Biotech Combisart®, system enables you to select the optimal hardware and consumables for your needs in microbiological analysis or particle count in quality assurance. Combisart® features a modular design and field-proven standard accessories to make your choice easier.

Description
At the heart of the Combisart® system is a high-grade stainless steel manifold or individual system designed to accommodate all types of filter holders and funnels such as:
- Ready-to-use units like Biosart® 100 Monitors and Biosart® 250 Funnels
- Flammable units such as stainless steel funnels for colony counting
- Autoclavable reusable funnels made of glass or polycarbonate

The low height of the manifold ports is particularly advantageous for working on a clean bench. For low number of samples, we recommend the use of the 1-branch manifold 16844 or the individual base 16841 on the top of a suction flask. For large number of samples, we recommend the 3- or 6-branch manifolds.

Sterile venting
A special feature of the Combisart® system is the stainless steel three-way valve (tap). They allows the vacuum for each filter holder to be individually controlled and each filter station to be sterilely vented. This rules out secondary contamination of the underside of the filter.

Sterilization
The system is compliant with ISO 8199 with regards to the sterilization methods of the equipment described in the "General Guide to enumeration of micro-organisms by culture". Since the most reliable sterilization method is autoclaving, the Combisart® design offers a unique advantage for this method. After inserting the membrane filters in the filter holders, you can simply unscrew them as an entire unit from each workstation and autoclaved them. This method increases reliability and saves sterilization capacity.

The right equipment for your application
In connection with the single base 16840 the manifolds are flexible to adapt disposable Biosart® 250 or stainless steel funnels. The stainless steel filter support of the single base 16840 allows a homogenous distribution of the residues on the membrane filter surface.

The Biosart® 100 adapter 16414 ensures that the Monitors are positioned perfectly, minimizing the risk of contamination during filtration.

3 or 6 polycarbonate holders of the type 16511 can be screwed onto the manifold directly.

Glass units (16306 or 16307) can be fitted by using corresponding adapter-|stopper-combinations.

Maximum flexibility
The screwable base support 16840 features additional advantages you will benefit from:
- You can pour out a non-filterable sample from each unit
- Filtration equally easy for left- or right handed users in your laboratory, because funnels can be positioned to suit the individual user

Some of the advantages you will benefit from when using the Combisart® System:

Safe & reliable
- Sterile venting of each membraneafter filtration
- Sterilization acc. to ISO 8199
- Special polished stainless steel surfaces allow easy cleaning & rinsing
- Low height is advantageous for working on a clean bench

Saves time
- Filtration of 3 or 6 samples in parallel
- Easy pouring out of non-filterable samples
- Equally easy for right- and left-handed users

Economical
- Maximum flexibility due to different set-ups
- Space-saving in the autoclave
- Stainless steel 304 – long lifecycle

Combisart® hardware-setups
Filtration systems fast and easy completed at www.sartorius-stedim.com/microbio

Specifications

Stainless steel quality	High-grade stainless steel: B.S. 304S31 | AISI 304
Dimensions in mm (L | H | D)	3-branch manifold: 435 | 103 | 120 6-branch manifold: 910 | 103 | 120
Max. operating pressure	Vacuum only
Sterilization	By autoclaving (max. 134°C), By dry heat (max. 180°C), By flaming, By other methods acc. to ISO 8199
Parts and materials	Lid, funnel, base part, filter support, clamp and tap made of stainless steel. Silicone flat gasket. Silicone lid seal
Flow rate per filter station for water at 90% vacuum	200 ml/min with 0.2 µm membrane filter 600 ml/min with 0.45 µm membrane filter
Filtration area	12.5 cm^2 (if using stainless steel funnels)
Suitable membrane filter diameter	50 mm (47 mm, if using a 47 mm frit 6980103)
Outlet spout (individual system)	10 mm outer diameter
Inlet (branches only)	Female thread, TR 20×2
Outlet (branches only)	Hose nipple, DN 10

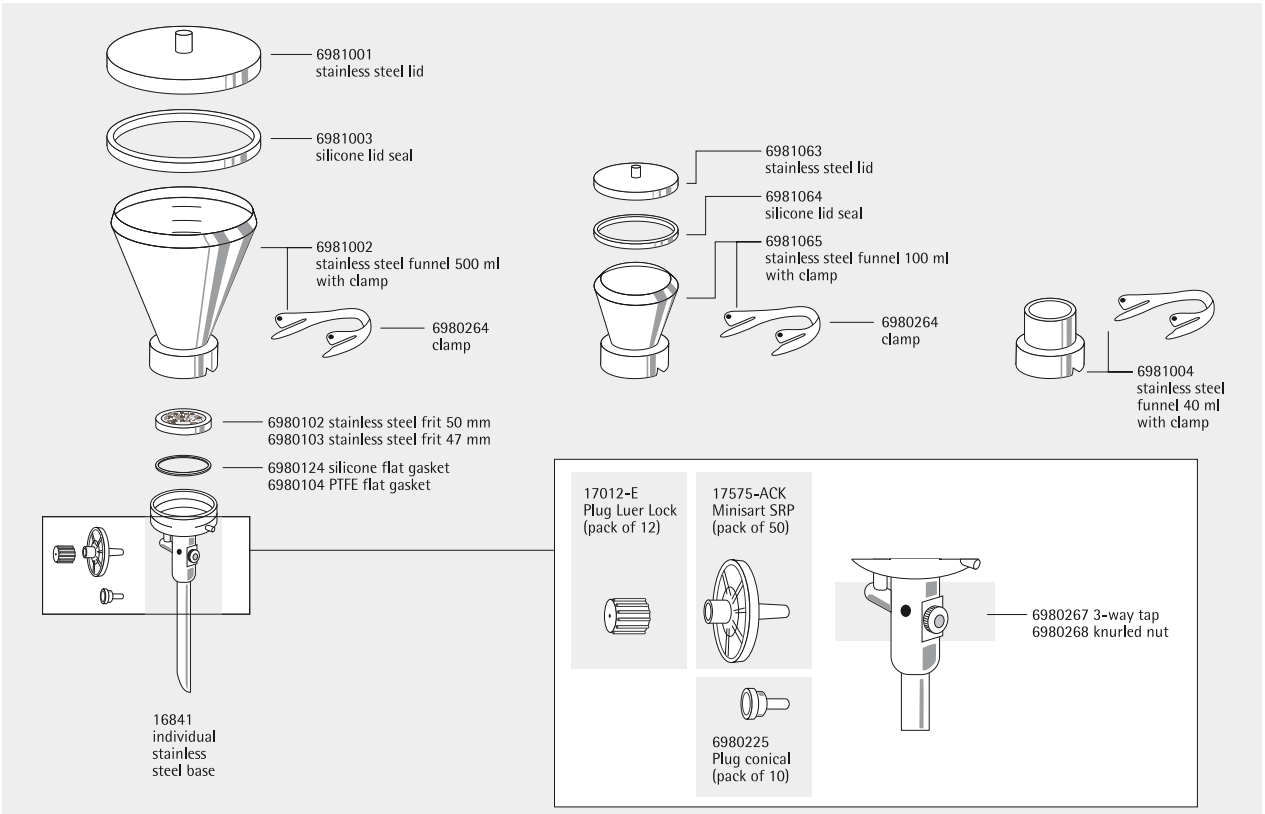
Combisart® individual system and multi-branch manifolds, made of high-grade stainless steel, pre-assembled with stainless steel funnels and lids

Description	Capacity	Order No.
Combisart® individual filter holder, stainless steel, 100 ml	1×100 ml	16219-CS
Combisart® individual filter holder, stainless steel, 500 ml	1×500 ml	16201-CS
Combisart® 1-branch stainless steel manifold 100 ml	1×100 ml	16844-CS
Combisart® 1-branch stainless steel manifold, 500 ml	1×500 ml	16845-CS
Combisart® 3-branch stainless steel manifold 100 ml	3×100 ml	16824-CS
Combisart® 3-branch stainless steel manifold 500 ml	3×500 ml	16828-CS
Combisart® 6-branch stainless steel manifold 100 ml	6×100 ml	16832-CS
Combisart® 6-branch stainless steel manifold 500 ml	6×500 ml	16831-CS

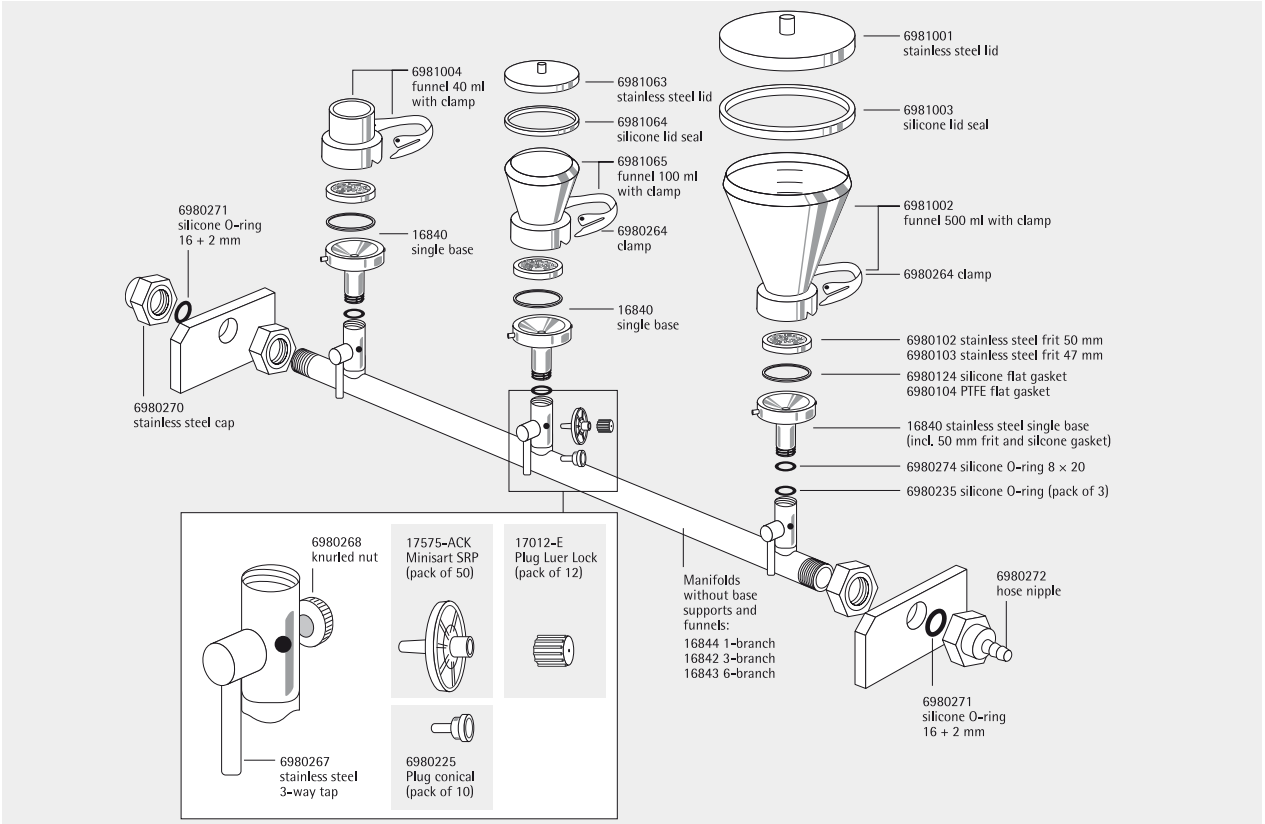
Combisart® individual and multi-branch bases, made of high-grade stainless steel, without funnels and lids, to accommodate various funnel types

Description	Order No.
Combisart® individual base, stainless steel, with frit (50 mm), to accommodate stainless steel funnels and Biosart® 100 | 250	16841
Combisart® 1-branch stainless steel manifold, without frit	16844
Combisart® 3-branch stainless steel manifold, without frits	16842
Combisart® 6-branch stainless steel manifold, without frits	16843
Combisart® Single base with frit (50 mm), stainless steel, accommodate stainless steel funnels and Biosart® 100 | 250	16840

Replacement parts for Combisart® individual filter holders



Replacement parts for Combisart® manifolds



Accessories and replacement parts for the Combisart® System

Description	Quantity	Order No.
Minisart SRP25, sterile filter for venting, 0.2 µm, individually sterile-packaged, could be autoclaved 5 times.	50	17575--------ACK
Plug luer lock, to close the Minisart inlet, if sterile venting is not required	12	17012----------E
Plug, conical, to close the venting hole beside the 3-way-valve, if sterile venting is not required	10	6980225
Silicone O-ring for base support 16840 male thread	3	6980274
Silicone O-ring for manifold female threads	3	6980235
Silicone flat gasket underneath the frit	1	6980124
PTFE flat gasket underneath the frit	1	6980104
Stainless steel frit, 50 mm diameter	1	6980102
Stainless steel frit, 47 mm diameter	1	6980103

Funnels, lids, seals and filter holders to connect on the Combisart® system

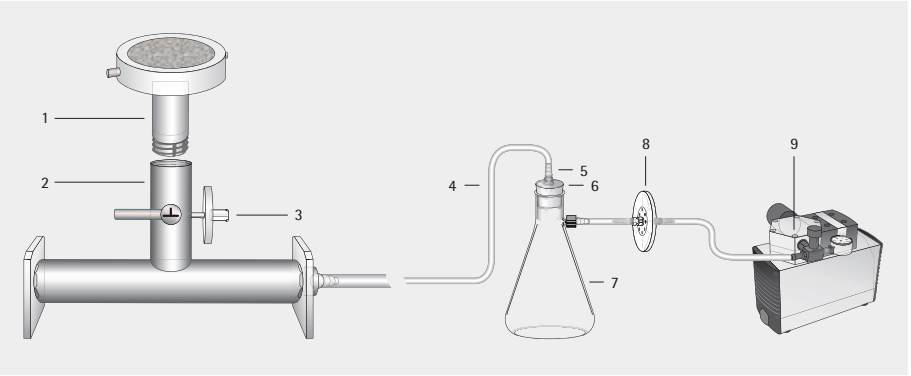
Description	Capacity	Membrane filter diameter	Order No.
Stainless steel funnel with closure clamp	100 ml	47 | 50 mm	6981065
Lid, stainless steel	for 100 ml funnel		6981063
Lid seal, silicone	for 100 ml funnel		6981064
Stainless steel funnel with closure clamp	500 ml	47 | 50 mm	6981002
Lid, stainless steel	for 500 ml funnel		6981001
Lid seal, silicone	for 500 ml funnel		6981003
Stainless steel funnel with closure clamp	40 ml	47 | 50 mm	6981004
Polycarbonate filter holder, complete with filter support and funnel	250 ml	47 mm	16511
Glass filter holder, complete with filter support, funnel and metal clamp	30 ml	25 mm	16306
Glass filter holder, complete with filter support, funnel and metal clamp	250 ml	47 | 50 mm	16307

Combisart® Adapter, to accommodate various funnel types

Description	Adaptation	Order No.
Biosart® 100 Adapter, silicone	Biosart® 100 Monitors onto 16840 (Combisart® base support) or onto 16841 (individual base)	16414
Biosart® 100 Adapter, stainless steel with silicone stopper	Biosart® 100 Monitors onto Combisart® manifolds 16844, 16842 and 16843	16835
Glass funnel Adapter, stainless steel with silicone stopper	16306 | 15 (glass funnel, 30 ml) onto Combisart® manifolds 16844, 16842 and 16843	16836
Glass funnel Adapter, stainless steel with silicone stopper	16307 (glass funnel, 250 ml) onto Combisart® manifolds 16844, 16842 and 16843	16837

How to set-up a vacuum filtration system

Combisart® 1-branch Stainless Steel Manifold plus Microsart® mini.vac



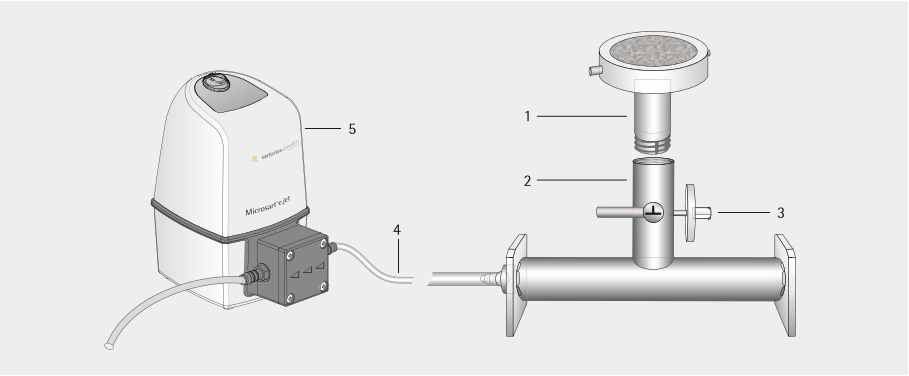
The filter station is connected to a suction flask, which is connected to a filtrate-protected vacuum pump.

Order Information

Pos.	Description	Order Qty.	Order No.	Detailed Information on page
	Combisart® stainless steel equipment:			35
1	Combisart® base support	1	16840	
2	Combisart® 1-branch manifold	1	16844	
	Sterile venting of the filter station:			37
3	Minisart® SRP25, 0.2 µm	1	17575--------ACK	
4	Rubber vacuum hose, 1 m	3*	16623	45
	Suction flask and stopper:			44
5	Tube connector	1	17204	
6	Silicone stopper	1	17173	
7	Suction flask, 2 liters	1	16672	
	Water trap for pump protection:			45
8	Vacusart®, 0.45 µm	1	17804----------M	
	Vacuum Pump:			46-47
9	Microsart® mini.vac, 230 V, 50 Hz	1	16694-2-50-06	
	Additional accessories:			
	Microsart® e.motion Dispenser	1	16712	14
	Stainless steel tweezers	1	16625	51
	Colony Counter	1	17649	50
	Incubator	1	18113	50
	Stainless steel prefilter attachment	1	16807	51
	Container for anaerobic incubation	1	16671	51

* required length depends on distance between the filter station and the vacuum source

Combisart® 1-branch Stainless Steel Manifold plus Microsart® e.jet



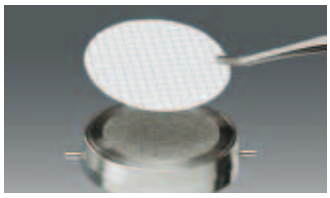
The filter station is directly connected to a vacuum fluid pump for simultaneous transfer of the filtrate to waste.

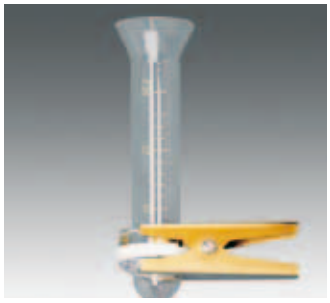
Order Information

Pos.	Description	Order Qty.	Order No.	Detailed Information on page
	Combisart® stainless steel equipment:			35
1	Combisart® base support	1	16840	
2	Combisart® 1-branch manifold	1	16844	
	Sterile venting of the filter station:			37
3	Minisart® SRP25, 0.2 µm	1	17575--------ACK	
4	Rubber vacuum hose, 1 m	3*	16623	45
	Vacuum Pump:			47
5	Microsart® e.jet Transfer Pump	1	166MP-3	
	Additional accessories:			
	Microsart® e.motion Dispenser	1	16712	14
	Stainless steel tweezers	1	16625	51
	Colony Counter	1	17649	50
	Incubator	1	18113	50
	Stainless steel prefilter attachment	1	16807	51
	Container for anaerobic incubation	1	16671	51

* required length depends on distance between the filter station and the vacuum source

Traditional Multi-Branch Manifolds and Individual Filter Holders Made of Stainless Steel, Glass and Polycarbonate





Individual filter holders
The three stainless steel holder types differ only in the funnel capacity (either 40 ml, 100 ml or 500 ml). They have been designed specifically for applications in which the particles or microorganisms retained on the membrane filter surface are of interest. The stainless steel frit filter support ensures a uniform distribution of the residues. Simple handling is very important regarding routine examinations. Stainless steel taps in the base allow the vacuum to be turned on and off. The special closure clamps simplify the addition or removal of the funnels adding to the ease of use.

Multi-branch manifolds
The manifold systems are available with 100 ml or 500 ml capacity funnels. The three or six separate filter holders save time when mass examinations have to be carried out. Due to the stainless steel taps on the manifold ports, the vacuum for each holder can be turned on and off individually. The stainless steel frit allows homogenous distribution of the residues on the membrane filter surface. Funnel and filter support can be disinfected by flaming.

Glass filter holders
These filter holders are available for the filtration of small volumes with a 30 ml top part and for larger volumes with a 250 ml top part. They can be sterilized by autoclaving (max. 134°C) or by dry heat (max. 180°C). The glass frit ensures uniform distribution of retained residue.

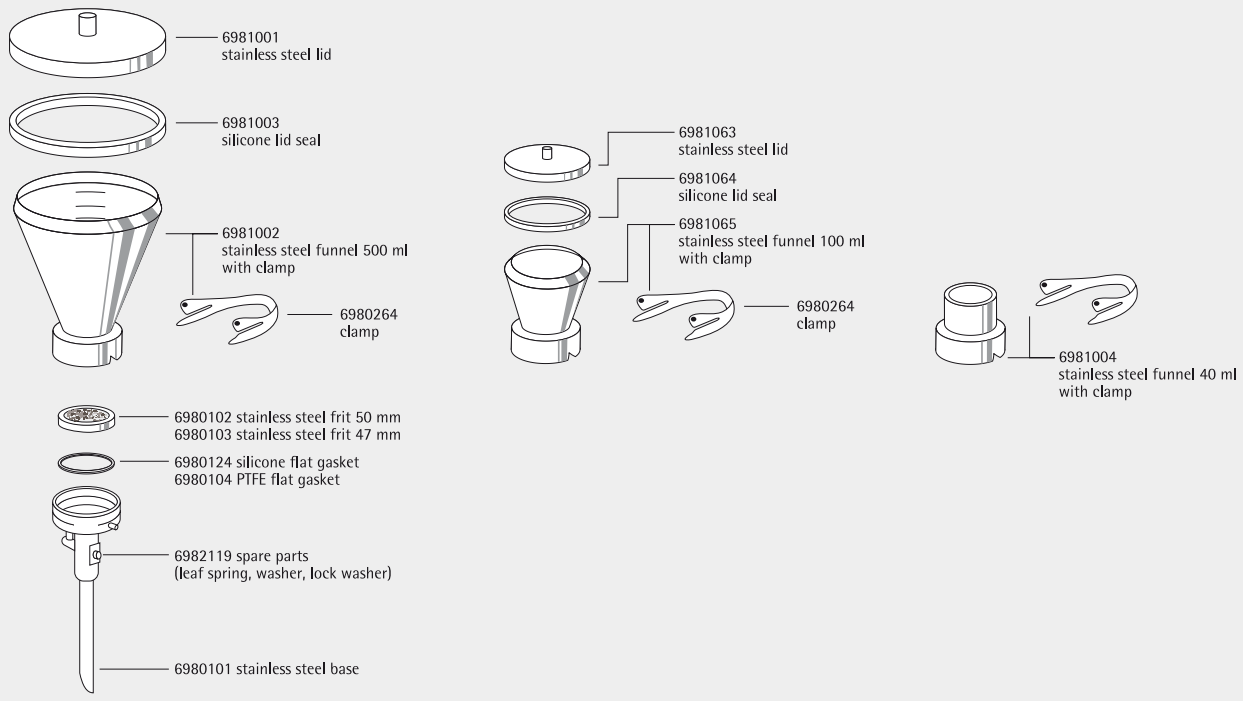
Polycarbonate filter holders
Type 16510 is complete with receiver flask, and can be operated with vacuum as well as with slight overpressure (0.5 bar is recommended for highest standing times). Type 16511 is like 16510, but without receiver flask. It is used on a suction flask or a vacuum manifold e. g. Combisart® systems. Both devices can be sterilized by autoclaving (max. 121°C).

Specifications

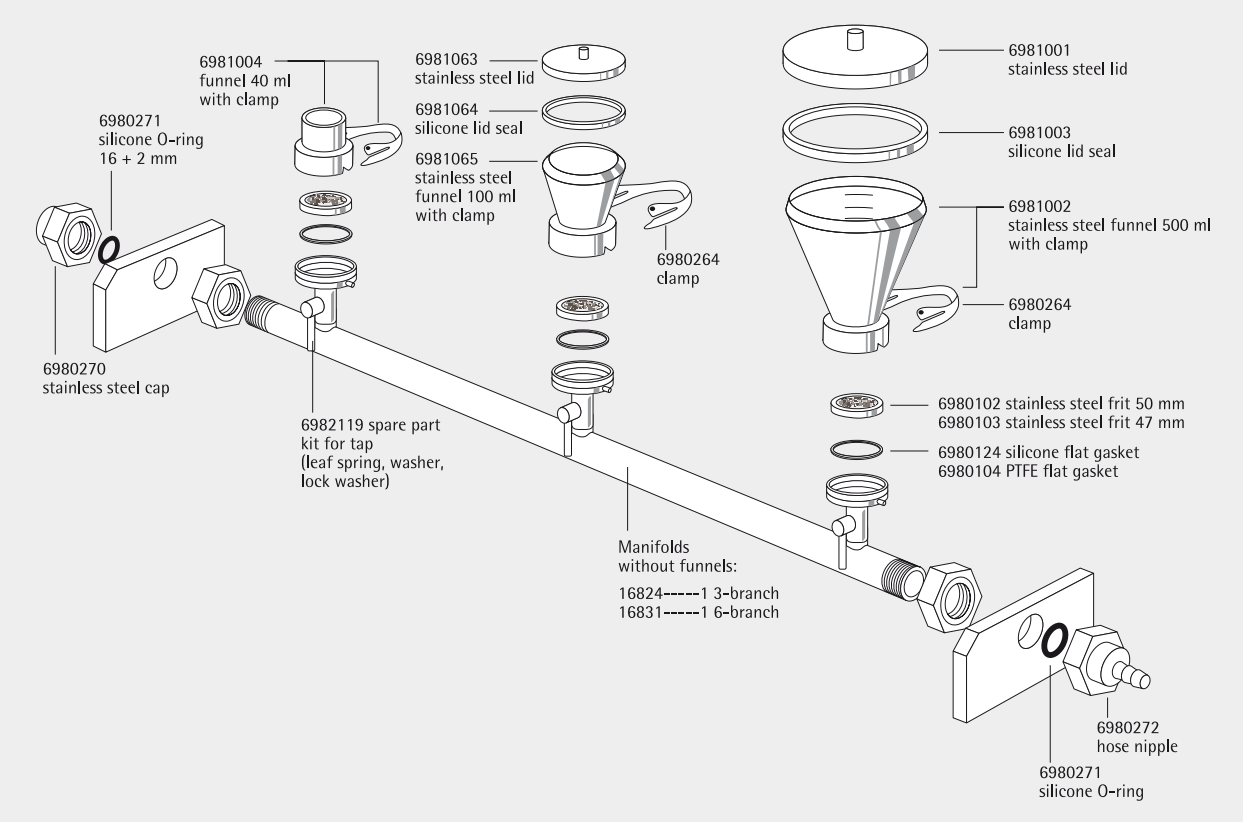
Stainless steel multi-branch manifolds and individual filter holders

Stainless steel quality	High-grade stainless steel: B.S. 304S31 | AISI 304
Dimensions in mm (W | H | D)	3-branch manifold: 3 × 100 ml: 432 | 184 | 120 3 × 500 ml: 442 | 262 | 132 6-branch manifold: 6 × 100 ml: 906 | 268 | 120 6 × 500 ml: 916 | 329 | 132
Max. operating pressure	Vacuum or max. 2 bar pressure (29 psi)
Sterilization	By autoclaving (max. 134°C), By dry heat (max. 180°C), By flaming, By other methods acc. to ISO 8199
Parts and materials	Lid, funnel, base part, – filter support, clamp and tap made of stainless steel. Silicone flat gasket. Silicone lid seal
Flow rate per filter station for water at 90% vacuum	200 ml/min with 0.2 µm membrane filter 600 ml/min with 0.45 µm membrane filter
Filtration area	12.5 cm^2
Suitable membrane filter diameter	50 mm (47 mm, if using a 47 mm frit filter support 6980103)
Outlet spouts (individual system)	10 mm outside diameter
Outlet (branches only)	Hose nipple, DN 10

Replacement parts for traditional individual filter holders



Replacement parts for traditional manifolds



Individual stainless steel filter holders, pre-assembled with stainless steel funnels and lids

Description	Capacity	Order No.
Individual stainless steel filter holder, 100 ml	1 × 100 ml	16219
Individual stainless steel filter holder, 500 ml	1 × 500 ml	16201
Individual stainless steel filter holder without lid, 40 ml	1 × 40 ml	16220

Multi-branch manifolds, stainless steel, with stainless steel funnels and lids

Description	Capacity	Order No.
3-branch stainless steel manifold, 100 ml	3 × 100 ml	16824
3-branch stainless steel manifold, 500 ml	3 × 500 ml	16828
6-branch stainless steel manifold, 100 ml	6 × 100 ml	16832
6-branch stainless steel manifold, 500 ml	6 × 500 ml	16831

Glass filter holders

Description	Capacity	Membrane filter diameter	Order No.
Glass filter holder, complete with filter support, funnel and metal clamp	30 ml	25 mm	16306
Glass filter holder, complete with filter support, funnel and metal clamp	250 ml	47 | 50 mm	16307

Polycarbonate filter holder

Description	Capacity	Membrane filter diameter	Order No.
Polycarbonate filter holder, with 250 ml top part and receiver flask, for vacuum or pressure filtration	250 ml	47 mm	16510
Polycarbonate filter holder, with 250 ml top part, for vacuum filtration only	250 ml	47 mm	16511

Accessories for Vacuum Filter Holders and Manifold Systems

Suction flasks and stoppers

Suction flask, 2 liter capacity
Vacuum-resistant flask made of duran 50 glass with plastic safety hose nipple according to the – German Industrial Standard No. 12476. Outer diameter of the hose nipple, 9 mm. Inner diameter of the opening, 60 mm. Stoppers are not enclosed.

A 1-liter capacity flask is available for countries which do not have safety restrictions on glass hose nipples.

Order numbers for Suction flasks

Description	Order No.
Suction flask, 5 liters acc. to DIN 12476, incl. stopper 75 D and glass tube	16672-----1
Suction flask, 2 liters acc. to DIN 12476, without stopper	16672
Tube connector for connecting a Combisart® stainless steel manifold to a suction flask 1 or 2 liters (not necessary when a Vacusart® is connected directly to the bored stopper)	17204
Suction flask, 1 liter (not available in countries which have safety restrictions on glass hose nipples)	16606

Replacement parts for suction flasks

Description	Order No.
Glas tube for silicon stopper 75 D for suction flask 5 liters 16672-----1	1EAQ--0017
Bored stopper 75 D for suction flask 5 liters 16672-----1	1EAS--0019
Assembling kit for hose barb for suction flask 5 liters 16672-----1	1EA---0018
Hose barb, complete, Polypropylene, for suction flask 2 liters 16672	6983003

Order numbers for bored stoppers for suction flask 2 liters 16672

Description	Adaptation	Order No.
Silicone stopper	Combisart® individual base 16841 or other individual stainless steel filter holders (16201, 16219, 16220) onto the suction flask 16672	17173
Silicone stopper	16306 | 15 (glass funnels, 30 ml) onto the suction flask 16672	17174
Silicone stopper	16307 (glass funnel, 250 ml) onto the suction flask 16672	17175

Order numbers for bored stoppers for suction flask 1 liter 16606

Description	Adaptation	Order No.
Silicone stopper	Combisart® individual base 16841 or other individual stainless steel filter holders (16201, 16219, 16220) onto the suction flask 16606	17004
Silicone stopper	16306 | 15 (glass funnels, 30 ml) onto the suction flask 16606	17005
Silicone stopper	16307 | 16 (glass funnel, 250 ml) onto the suction flask 16606	17006

Water traps
Used between suction flask and vacuum source, in order to prevent overflow of filtrate into an electric vacuum pump

Vacusart®
Vacusart® is a ready-to-connect filtration unit, consisting of a polypropylene housing and a hydrophobic, but air-permeable PTFE membrane with a pore size of 0.45 µm. Vacusart® is perfectly suitable for the protection of vacuum pumps. It could be put directly into the hole of the bored stopper and connected with the rubber hose to the vacuum pump.

Description	Order No.
Vacusart® water trap, pack of 3	17804----------M

Woulff's bottle, 500 ml
Used between suction flask and vacuum source. Allows simple control of the vacuum with glass units without a separate tap and prevents furthermore the filtrate from overflowing from the suction flask.

Description	Order No.
Woulff's bottle, 500 ml	16610

Rubber vacuum hose (1 meter)
Thick-walled rubber hose for connecting the system components, e. g. suction flasks, vacuum pumps, etc. When ordering, please state length required in meters.

Description	Order No.
Rubber vacuum hose (1 meter)	16623

Electric vacuum pumps

Microsart® mini.vac
Microsart® maxi.vac
Neoprene membrane pumps with low noise level, oil- and maintenance-free; reliable sources of vacuum.

The new vacuum pump series provides up to date technology for daily use in the Microbiology laboratory environment.

The vacuum produced by the new pumps is controlled and can be easily adjusted to your specifications. Thus damageable cells (e.g. bacteria) are concentrated on the surface or a membrane filter under better conditions, which results in decreased sub lethals, higher recovery rates and shorter incubation times.

Specifications of electric vacuum pumps

	Microsart® maxi.vac 16694-2-50-22 16694-1-60-22	**Microsart® mini.vac 16694-2-50-06 16694-1-60-06**
Delivery	22 l/min	6 l/min
Ultimate Vacuum	100 mbar	100 mbar
Noise level [100 mbar]	57.5–59.0 dBA	53.5 dBA
Operating Pressure	1 bar	2.5 bar
Materials (contact with filtrate possible)	Aluminum, CR (Neoprene), NBR (Perbunan)	PPS, EPDM, FPM (Viton)
Connectors for Tube (mm)	ID 9	ID 4
Ambient Temperature	5…40°C	5…40°C
Mains	16694-2-50-22: 230 V | 50 Hz 16694-1-60-22: 115 V | 60 Hz	16694-2-50-06: 230 V | 50 Hz 16694-1-60-06: 115 V | 60 Hz
Motor Protection	IP 44	IP 20
Power P1	130 W	65 W
Operating Current	0.9 A	0.63 A
Weight	7.1 kg	1.9 kg
Dimensions W | H | D (mm)	261 | 204 | 110	164 | 141 | 90
Recommended application	Multiple filtration runs with multi-branch manifolds	Single filtration run with individual filter station

Order numbers

Description	**Order No.**
Microsart® maxi.vac for multiple filtration runs, 230 V, 50 Hz	16694-2-50-22
Microsart® maxi.vac for multiple filtration runs, 115 V, 60 Hz	16694-1-60-22
Microsart® mini.vac for single filtration run, 230 V, 50 Hz	16694-2-50-06
Microsart® mini.vac for single filtration run, 115 V, 60 Hz	16694-1-60-06

Replacement parts	**Order No.**
Replacement kit for 16694-2-50-22 and -1-60-22, set of one membrane, two valve springs and two head seals	1ED---0055
Replacement kit for 16694-2-50-06 and -1-60-06, set of one membrane, two valve springs and two head seals	1ED---0054
Sound absorber for 16694-2-50-22 and -1-60-22	1EH---0002
Sound absorber for 16694-2-50-06 and -1-60-06	1EH---0001
Fine adjustment head for 16694-2-50-22 and -1-60-22	1EV---0002
Fine adjustment head for 16694-2-50-06 and -1-60-06	1EV---0001
Fine adjustment head for 16694-2-50-06 and -1-60-06, for pressure filtration	1EV---0003

Microsart® e.jet Transfer Pump

The Microsart® e.jet is a new vacuum laboratory pump able to create sufficient vacuum for vacuum filtration and simultaneous transfer of the filtered liquid to waste. The Microsart® e.jet is ideal for sample preparation in Microbiology achieving a trans membrane pressure of 600 mbar and a flow rate of > 3.5 Nl/min (3.5 Normliters water displacement by air in one minute). Constant flow rates and a defined maximum vacuum guarantee smooth and reliable filtration.

Until now vacuum equipment for the Membrane Filtration Method consists of numerous parts including connectors, tubes, vacuum containers, protection filter, Woulff's bottle and a vacuum pump. After several samples the vacuum must be broken to empty the filtrate collection container. The complete traditional equipment requires far more laboratory space and is time consuming to operate and maintain. The new Microsart® e.jet greatly reduces operating complexity.

The Microsart® e.jet pump is an ideal accessory for 3-branch and 1-branch manifolds. Compared to traditional equipment Microsart® e.jet and stainless steel manifold require only 30% of the average space meaning in particular less congestion working in Laminar Flow Cabinets.

Traditional vacuum pumps often loose their efficiency and capability to generate sufficient vacuum, when liquid is drawn into the pump head. The Microsart® e.jet is designed to pump both gas and liquids, meaning no loss of efficiency or malfunctions from water drawn into the pump head.

Technical Specifications

Flow rate	> 3.5 Nl/min
Max. Vacuum	0.4 bar
Max. Pressure	1.0 bar
Mains	100–240 V | 50-60 Hz
Materials (in contact with filtrate)	PTFE, ETFE, Polypropylene, EPDM
Weight	Pump: 1425.3 g Power supply: 202.8 g
Dimensions (W | L | H)	120 × 170 × 190 mm
Max. ambient Temp.	+5 ... +40°C
Max. Temp of liquid	+5 ... +80 C
Max. viscosity	< 150 cSt
Protection type	IP 64
Protection class	III

Order Information

Description	Order Number
Microsart® e.jet Transfer Pump	166MP-3

Replacement Parts

Description	Order Number
Pump head complete for 166MP-3	1EP---0001
Power supply complete for 166MP-3	1EE---0007
Threaded Fitting for 166MP-3	1EAF--0020

Order numbers traditional pumps

Description	Order No.
Multiple filtration runs: 13 mbar final vacuum, 26 l/min max., 220 V, 50 Hz	16612
Multiple filtration runs: 13 mbar final vacuum, 26 l/min max., 110 V, 60 Hz	16615
Individual filtration run: 100 mbar final vacuum, 20 l/min max., 220 V, 50 Hz	16692
Individual filtration run: 100 mbar final vacuum, 20 l/min max., 110 V, 60 Hz	16695

Replacement parts	Order No.
Set of two neoprene membranes, four valve springs and two neoprene head seals for 16612/16615	6986017
Set of one neoprene membrane, two valve springs and one neoprene head seal for 16692/16695	6986105

Water jet pump
Simple vacuum source. For connection to a water tap with G3/4 male thread.

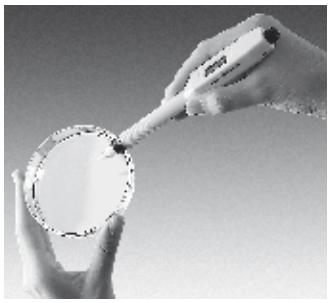
Description	Order No.
Water jet pump, with G 3/4 female thread	16611

Hand-operated vacuum pump
Practical vacuum source, also outside of a laboratory. Up to 80% vacuum can be obtained. The body is of PVC. Supplied completely with gauge, vacuum release lever and a 60-cm length of clear plastic tubing.

Description	Order No.
Hand-operated vacuum pump with gauge	16673

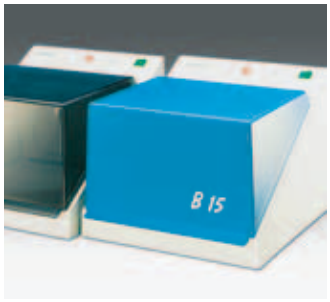
Dosing Syringe
The most convenient way to moisten the NPS with water is to use a dosing syringe with an adapted Minisart syringe filter. Simultaneous sterilization and dispensing of demineralized water in 3.5 ml steps is easily done by dropping the sinker at the end of the suction tubing into the water, then filling the dosing syringe and dispensing sterile water by operating the twigger automatically.

Description	Order No.
Dosing syringe, 0.5–5 ml	16685-2
Minisart®, 0.2 µm, individually, sterile-packaged	17597----------K
Replacement part: tubing with sinker for 16685-2 and 16685	6986125
Service Kit for Dosing Syringe 16685-----2	1EP---0002



Colony counter
Compact, handy battery-operated colony counter, it is as simple to use as a ball-point pen, and has a 4-digit LCD-display. The counter is supplied with an additional marker refill.

Description	Order No.
Colony counter	17649
Replacement part: Black marker refill	6981540



Incubator
Compact, space-saving incubator for the incubation of membrane filters on nutrient pads or other nutrient media. The incubator has a capacity of 15 liters and is designed to hold the following numbers and sizes of petri dishes: 200×47 mm or 160×56 mm | 60 mm or 72×90 mm.

The swing-up cover and removable insertion plate simplify loading and unloading. The cover is opaque, avoiding light penetration into the chamber.

Specifications Incubator

Incubator	18113
Voltage	230 V
Frequency	50 | 60 Hz
Rated power	0.2 kW
Weight	5.5 kg (12 lbs)
Max. load for insertion plate	5 kg (12 lbs)
Dimensions W | H | D (mm)	Inner 270 | 205 | 288 Outer 340 | 270 | 431
Temperature range	20°C (or 5°C above room temperature) to 50°C
Temperature deviation	Less than ±0.2°C (at 37°C and RT 20°C)
Spacial temperature deviation	Less than ±0.8°C
Capacity	approx. 15 liters

Description	Order No.
Incubator	18113

Stainless steel tweezers
Membrane filters should only be handled with suitable tweezers to avoid contamination which can result from hand contact. Sartorius Stedim Biotech stainless steel tweezers can be flamed and they are autoclavable. They have blunt-edged tips for a careful, firm hold of the membrane filter.

Description	Order No.
Stainless steel tweezers	16625

Stainless steel prefilter attachment
The stainless steel prefilter holder allows the removal of coarse, solid particles from samples for microbiological analysis before and during the actual bacteria retentive filtration. The device is clipped between funnel and base of the stainless steel vacuum filter holders. It can be autoclaved and flamed. 11301, a white cellulose nitrate (cellulose ester) membrane filter with a pore size of 8 µm is used as the prefilter and it retains the coarse suspended particles from the sample, whereas it allows microorganisms to pass through. These microbes are trapped on the surface of the underlying bacteria-retentive membrane filter (e. g. 0.45 µm). After filtration is complete, the test filter is incubated, and the colonies can grow on the filter surface without disturbance from, or being hidden by, an excess of particles.

Description	Order No.
Stainless steel prefilter attachment	16807
Cellulose nitrate membranes with 50 mm diameter and 8 µm pore size for the prefilter holder, pack of 100, individually, sterile packaged	11301--50----ACN
Replacement part: support plate, autoclavable, flammable	6981139

Container for anaerobic incubation
Stainless steel container with 11.8 cm inner diameter, 10.7 cm depth and a with metal insert for convenient insertion and removal of petri dishes. The plastic lid holds two taps for the vacuum exhaust and for cleaning with inert gas, with 6 mm hose nipples (for 16623), vacuum gauge and sealing ring. For up to fourteen 60 mm, or up to six 90 mm petri dishes.

Description	Order No.
Anaerobic container	16671

School Kit for Microbiological Experiments

Complete kit
For specific applications in microbiological testing, we recommend our practical, complete kit.

The school kit for microbiological experiments is an ideal teaching aid for instruction in microbiology and environmental protection in schools and other educational institutes. The rugged aluminum case contains all the equipment necessary for microbiological testing.

The handbook included in the case provides general instructions and detailed descriptions of methods for 7 experiments: detection of microorganisms in water, air, and soil; the effects of antibiotics; detection of yeasts on substrates in nature; production of gas through alcoholic fermentation; and bacterial growth at different temperatures.

The vacuum, which is necessary for the filtration, is created with help of a syringe and a 3-way valve.

Contents

Parts supplied	
Aluminium case	
Stainless steel tweezers	16625
Filtration system for samples	Device 16510. 3-way valve 16639. Adapter 17108D. Syringe 16647. Glass fiber filter 13400-013S.
Filtration system for sterile water	Filter holder 16517E. Syringe 16647. Membrane filter 11307-025N.
Inoculation loop	17109
Culture media (nutrient broth)	14132----------K
Wort nutrient pad sets	14058
Standard nutrient pad sets	14055
Endo nutrient pad sets	14053

Order number	
24002	School kit for microbiological experiments, in a lockable aluminium case

Sterility Testing Systems
Sterisart® Universal Pump

International pharmacopeias require the complete sterility of pharmaceutical products that are injected into the blood stream or that otherwise enter the body below the skin surface. As a manufacturer of such products, you are required to supply proof of sterility of the final product batch.

The new Sterisart® Universal Pump is available in two versions: as basic version 16419 and as an upgraded version 16420 with display and user software. The pump can be used in clean rooms, integrated into clean benches, or installed countersunk in the working surface of isolators. Its low, compact design has a space-saving footprint – a great benefit for most clean room benchtops and isolators.

Additional Features and Benefits
- Closed system – no ventilation for enhanced safety
- Robust and maintenance free
- Compact and ergonomic construction
- Modular design
- Pump available with special software (operator-guided menus; all process sequences can be logged; barcode recognition)

Special brochures available on request.
Order no. SLD1003-e, SLD2010

Specifications

Technical specifications for Sterisart® Universal pump

Pump flow rate	70–650 ml/min
Power requirements	100–240 VAC
Frequency	50–60 Hz
Power consumption	100 W
Dimensions Pump Pump with holding ring for bottles, container	 approx. 336×260×210 mm (with lever) (W×D×H) approx. 440×365×485 mm (W×D×H)
Weight Basic version 16419 Upgraded version 16420 with display and user software	 approx. 13.5 kg approx. 14.6 kg

Ordering Information

Order no.	Description
16419	Sterisart® Universal pump, basic version
16420	Sterisart® Universal pump, upgraded version with display | user software

Accessories

Order number	Description
1ZE---0033	Footswitch
1ZG---0014	Adapter for Sterisart® container for draining for usage with Millipore Equinox pump
1ZE---0039	Transport trolley
1ZE---0040	Communication kit
1ZE---0041	Installation kit for isolators

Further accessories are available on request.

Sterility Testing Systems
Sterisart® NF

Sterisart® NF is a completely closed system for the sterility testing of pharmaceutical products. It is based on the membrane filter method, however it eliminates the procedure of manipulating the filters. By this the main risk of a secondary contamination and false positive results is eliminated. A peristaltic pump transfers the sample into the filtration units, and after rinsing, the filtration units are filled with media and used for incubation of the filters without any contact to the environment.

Special brochures available on request.
Order no. SLD1002-e, SL-2019-e, SLD2006-e, SLD2005-e, SLD2007-e, S--2019-e, SLD2009-e, SLDS2001

Sterisart® NF offers the following features and benefits

- Reliable, Sartochem® membrane:
  - High retention of microbes
  - Low adsorption
  - High mechanical stability
- Easy to use:
  - Pre-installed color-coded tube clamps
  - Easy-to-read graduated marks
  - User-friendly, several practical adapters available
  - Product-|lot number identification
- Secure:
  - Gas-impermeable packaging for protection against sterilants

Specifications

Technical specifications for Sterisart® NF

Pore size of the Sartochem® membrane filter	0.45 µm, tested with Serratia marcescens
Filter area	15.7 cm^2 in each Sterisart® container
Flow rate (for water)	500 ml/min at 1 bar (approx. 15 psi)
Pore size of the air filters	0.2 µm PTFE, validated acc. to HIMA for the retention of B. diminuta
Sample container capacity	120 ml (graduation marks at 50, 75 and 100 ml)
Max. operating pressure	3 bar (approx. 44 psi) at 20°C
Max. operating temperature	50°C
Sterilization	ETO (ethylene oxid gas) or gamma irradiation

Ordering Information

Sterisart® NF alpha disposable units for sterility testing in clean rooms, individually, sterile packaged, ETO-sterilized, needles made of flamable stainless steel, pack size 10

Type of sample	Type of sample container	Description	Order No.
LVPs	Closed glass bottles with septum	Sterisart® NF alpha with long dual-needle spike, sterile vented	16466--------ACD
LVPs SVPs	Open containers, i.e. glass ampoules, glass bottles Collapsible bags	Sterisart® NF alpha with long needle, by-packed sterile venting needle	16467--------ACD
Medical devices	Tubing systems and bags with Luer or Luer Lock connectors	Sterisart® NF alpha with Luer (Lock) connection, by-packed long needle and sterile venting needle	16468--------ACD

Sterisart® NF gamma disposable units for sterility testing in isolators, individually sterile, double-packaged, gamma irradiated, needles made of flamable stainless steel, pack size 10

Type of sample	Type of sample container	Description	Order No.
LVPs	Closed glass bottles with septum	Sterisart® NF gamma with long dual-needle spike, sterile vented	16466--------GBD
SVPs	Closed glass vials with septum	Sterisart® NF gamma with short dual-needle spike, sterile vented	16476--------GBD
LVPs, SVPs, Eye drops	Closed plastic containers | vials | ampoules, plastic containers of Blow-Fill-Seal fillings	Sterisart® NF gamma with long needle, side opening, with solid pointed tip, non-coring, by-packed sterile venting needle	16477--------GBD
LVPs SVPs	Open containers, i.e. glass ampoules, glass bottles Collapsible bags	Sterisart® NF gamma with long needle, by-packed sterile venting needle	16467--------GBD
Lyophylisates, Soluble powders, Liquid antibiotics	Closed glass vials with septum	Sterisart® NF gamma with two dual-needle spikes of different length, one is sterile vented	16475--------GBD
Pre-filled syringes	Syringes with and without needles	Sterisart® NF gamma with universal Luer adapter and long dual-needle spike, sterile vented	16469--------GBD
Medical devices	Tubing systems and bags with Luer or Luer Lock connectors	Sterisart® NF gamma with Luer (Lock) connection, by-packed long needle and sterile venting needle	16468--------GBD
NEW Medical devices	Containers | bags with Luer Lock male connectos	Sterisart® NF gamma with female Luer Lock connection	16478--------GBD

Accessories

Application	Description	Order No.
Difficult-to-dissolve powders in closed glass vials with septum, non-vacuo	Sterisart® NF gamma tubing system with two dual-needle spikes of different length, needles made of flamable stainless steel	16470--------GBD
Sterile venting of containers with rinsing solution and nutrient media, additional sterile venting needles, equal to the by-packed needles of the Sterisart® NF units i.e. type 16467, 16468 and 16477	Needle with venting filter, 4 cm, stainless steel, individually sterile packaged, gamma irradiated, pack size 50	16596--------HNK

Further units (16464--------ACD \| GBD) on request.

Reusable Sterility Test System

Reusable sterility test system for the sterility testing of injection and infusion solutions. The filter holders are easy to clean, dishwatersafe and autoclavable. The system can be designed according to the needs of the user, and the membrane filter can be chosen according to requirements.

Specifications

Specifications of the filter holders

Material	Glass cylinder; polypropylene base and sealing plug; anodized aluminum closing cap.
Sealing	Silicone gasket, 36/47 mm (6980573) Silicone O-ring, 40.5x 3.5 mm (6980574)
Filter diameter	47 mm
Filtration area	12.5 cm^2
Capacity	16523: 130 ml (56 ml up to the mark for aerobic incubation at a level of 60 mm, 110 ml up to the mark at the 115-mm level).
Operating pressure	Vacuum only
Sterilization	Autoclaving at 121°C

General accessories for the reusable sterility test system

Description	Order numbers
Filter holder with 130 ml capacity	16523
Stainless steel manifold	16826
Stainless-steel adapter	17756
T-distributor for 2 filter holders	16966
Filling cap with filling needle	16967
Silicone adapter	16968
Peristaltic pump	16696
Silicone tubing, 4 × 1.5 mm	16699
Holding rod for inlet tube | needle	16974
Incubation rack	16975
Tube clamps (tubing clips)	16978
Venting filters, pack size 50	17574----------K

Additional accessories for reusable sterility test system (for ampoule testing)

Description	Order numbers
Inlet tube	16963
Holding tongs	16973
Ampoule breaker	16969
Clamp holder	16976
Support stand	16970

Additional accessories for reusable sterility testing system (for testing infusion solutions in bottles)

Description	Order numbers
Inlet needle (long)	16964
Inlet needle (short)	16964-----3

Consumables (membrane filters, 47 mm, 100 pieces/pack) for the reusable sterility test system

Order numbers	Pore size	Description	Application
11306--47------N	0.45 µm	Cellulose nitrate membrane filter	pH 4-8, most hydrocarbons
13106--47----HCN	0.45 µm	Cellulose nitrate membrane filter with hydrophobic edge	pH 4-8, most hydrocarbons
11106--47------N	0.45 µm	Cellulose acetate membrane filter	pH 4-8, most alcohols, hydrocarbons and oils
13506--47----HCN	0.45 µm	Cellulose acetate membrane filter with hydrophobic edge	pH 4-8, most alcohols, hydrocarbons and oils
18406--47------N	0.45 µm	Regenerated cellulose membrane filter	pH 3-12, solvent-resistant
11407--47------N	0.2 µm	Cellulose nitrate membrane filter	pH 4-8, most hydrocarbons
13107--47----HCN	0.2 µm	Cellulose nitrate membrane filter with hydrophobic edge	pH 4-8, most hydrocarbons
11107--47------N	0.2 µm	Cellulose acetate membrane filter	pH 4-8, most alcohols, hydrocarbons and oils
13507--47----HCN	0.2 µm	Cellulose acetate membrane filter with hydrophobic edge	pH 4-8, most alcohols, hydrocarbons and oils
18407--47------N	0.2 µm	Regenerated cellulose membrane filter	pH 3-12, solvent-resistant

Peristaltic pump

Specifications

Rotor speed	1.5–220 rpm
Operating voltages and frequencies	110–240 V 50/60 Hz
Speed control ratio	147:1
Power rating	100 VA
Operating temperature	4°C to 40°C
Storage temperature range	–40°C to 70°C
Weight	5.5 kg | 12.1 lbs
Noise	<70 dBA at 1 m
Standards	IEC 335-1, EN 60529 (IP31)
Machinery Directive	98/37/EC EN 60204-1
Low Voltage Directive	73/23/EG EN 61010-1
EMC Directive	89/336/EG EN 50081-1/EN 50082-1

Order number

16696

EXPAND® Trainings and Seminars

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These training seminar are intended for staff members working in the areas of quality assurance and | or quality control in the pharmaceutical industry and food and beverage industry.

Microbiological Basics of Product Safety and Industrial Hygiene

Theoretical Aspects
- Introduction to general microbiology
- Growth conditions | microbiological detection methods
- The microbiological lab
- Microbiological examination of water and drinking water: regulations und methods
- Personnel hygiene

Practical Exercises
- Introduction to microbiological work
- Pour plate, streak plate
- Sample filtration runs with various media: water, particulate media, oil-containing samples
- Evaluation of different growth samples

Advanced Course for Beverage Industries

Theoretical Aspects
- Product-spoiling microorganisms | detection methods
- Biochemical differentiation
- Hazard Analysis and Critical Control Points Concept (HACCP)
- Industrial Hygiene

Practical Exercises
- Microscopic examination of bacteria, yeast and molds
- Differentiation of bacteria and yeast:
  - Morphologic and microscopic examination
  - Gram-staining (alternative methods)
  - Biochemical tests
  - Use of different identification systems

Use of Light Microscopy in Microbiological Quality Control

Theoretical Aspects
- Basic principles of microscopy
- Optical train | Köhler illumination
- Bright field | dark field | phase contrast
- Fluorescence microscopy | applications in microbiological QC
- Determination of the cellular morphology of bacteria and fungi using light microscopy

Practical Exercises
- Adjusting the microscope | Köhler illumination
- Microscopic examination of prepared sample with bright field | dark field | phase contrast
- Microscopic examination of bacteria, yeast and molds

Workshop on Sterility Testing

Theoretical Aspects
- Sterility testing
  - Regulations and guidance
  - Sterility test methods | Test limitations
  - Interpretation of sterility test results
  - Validation
- Sterility test isolators
  - Standards and regulation | Design
  - H_2O_2 decontamination
  - Microbiological monitoring

Practical Exercises
- Sterility testing of different products (LVPs | SVPs | ampoules | antibiotics | medical devices)
- Performing sterility test in isolators
- Observation and interpretation of results
- Sterility test isolators in routine

Registration and Information

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Chemical Compatibility
1. Filter Materials and Mini Cartridges

	Cellulose acetate	Cellulose nitrate	Reg. Cellulose	PTFE	Poly-amide	Glass fiber	Polycar-bonate	Poly-ether-sulfone	Sartobran® P cartridge	Sartofluor cartridge
Solvents	**111**	**113**	**184**	**118**	**250**	**134**	**230**	**154**		
Acetone	–	–	•	•	–	•	○	–	–	E
Acetonitrile	?	?	•	•	–	?	?	•	?	?
Gasoline	•	•	•	•	•	•	•	•	V	–
Benzene	•	•	•	•	•	•	?	•	–	–
Benzyl alcohol	○	○	•	•	•	•	?	–	○	•
n-Butyl acetate	○	–	•	•	•	•	•	•	E	?
n-Butanol	•	•	•	•	•	•	•	•	•	•
Cellosolve	•	–	•	•	?	•	–	•	–	–
Chloroform	–	•	•	•	•	•	–	–	–	–
Cyclohexane	○	○	•	•	?	•	•	–	○	V
Cyclohexanone	–	–	•	•	•	•	?	?	–	–
Diethylacetamide	–	–	•	•	•	•	?	?	–	?
Diethyl ether	•	–	•	•	•	•	•	?	–	–
Dimethyl formamide	–	–	○	•	○	•	–	?	–	•
Dimethylsulfoxide	–	–	•	•	•	•	–	–	—	•
Dioxane	–	–	•	•	•	•	–	•	–	•
Ethanol, 98%	•	○	•	•	•	•	•	•	•	•
Ethyl acetate	–	–	•	•	•	•	?	–	–	–
Ethylene glycol	•	○	•	•	?	•	•	•	•	•
Formamide	?	?	?	•	?	•	–	?	–	•
Glycerine	•	•	•	•	•	•	•	•	•	•
n-Heptane	•	•	•	•	?	•	?	?	•	V
n-Hexane	•	•	•	•	•	•	•	?	V	–
Isobutanol	○	○	•	•	•	•	•	?	–	•
Isopropanol	•	○	•	•	•	•	•	•	•	•
Isopropyl acetate	○	–	•	•	?	•	?	•	–	•
Methanol, 98%	•	–	•	•	?	•	•	•	•	•
Methyl acetate	–	–	•	•	•	•	?	–	–	•
Methylene chloride	–	○	•	•	•	•	–	–	–	–
Methyl ethyl ketone	–	–	•	•	•	•	?	–	–	•
Methyl isobutyl ketone	•	–	•	•	•	•	?	?	–	–
Monochlorobenzene	•	•	•	•	•	•	–	?	V	V
Nitrobenzene	•	○	•	•	•	•	–	?	–	–
n-Pentane	•	•	•	•	•	•	•	?	V	V
Perchloroethylene	•	•	•	•	•	•	•	?	V	V
Pyridine	–	–	•	•	•	•	–	–	–	–
Carbon tetrachloride	○	•	•	•	•	•	?	•	–	?
Tetrahydrofuran	–	–	•	•	•	•	–	–	–	–
Toluene	•	•	•	•	•	•	?	•	–	–

Key to symbols see next page.

	Cellulose acetate	Cellulose nitrate	Reg. Cellulose	PTFE	Poly-amide	Glass fiber	Polycar-bonate	Poly-ether-sulfone	Sartobran® P cartridge	Sartofluor cartridge
Solvents	**111**	**113**	**184**	**118**	**250**	**134**	**230**	**154**		
Trichloroethane	○	•	•	•	?	•	?	?	–	?
Trichloroethylene	•	•	•	•	•	•	–	•	–	?
Xylene	•	•	•	•	•	•	•	•	–	–
Acids										
Acetic acid, 25%	•	•	•	•	○	?	○	•	•	?
Acetic acid, 96%	–	–	•	•	–	?	?	•	–	•
Hydrofluoric acid, 25%	•	○	○	•	–	?	•	?	–	–
Hydrofluoric acid, 50%	•	○	–	•	–	?	•	?	–	–
Perchloric acid, 25%	–	○	○	•	–	?	?	?	–	•
Phosphoric acid, 25%	•	○	○	•	–	?	?	?	•	•
Phosphoric acid, 85%	○	○	○	•	–	?	–	?	–	V/E
Nitric acid, 25%	–	○	–	•	–	?	•	•	–	V
Nitric acid, 65%	–	–	–	•	–	?	•	•	–	–
Hydrochloric acid, 25%	–	○	–	•	–	?	•	•	–	V/E
Hydrochloric acid, 37%	–	–	–	•	–	?	•	•	–	V/E
Sulfuric acid, 25%	–	○	○	•	–	•	?	•	–	•
Sulfuric acid, 98%	–	–	–	•	–	?	–	?	–	–
Trichloroacetic acid, 25%	–	○	•	•	–	?	?	?	–	•
Bases										
Ammonium, 1N	•	•	○	•	•	•	–	•	E	•
Ammonium hydroxide,25%	–	○	–	○	•	○	–	•	–	•
Potassium hydroxide,32%	–	–	○	•	○	○	–	•	–	•
Sodium hydroxide, 32%	–	–	○	•	○	○	–	•	–	•
Sodium, 1N	○	–	○	•	•	•	–	•	–	•
Aqueous solutions										
Formaline, 30%	○	•	○	•	○	•	•	•	–	•
Sodium hypochlorite, 5%	•	○	•	•	○	•	?	?	–	•
Hydrogen peroxide, 35%	•	•	○	•	○	?	?	?	•	•

Key to symbols

• = compatible
○ = limited compatibility
– = not compatible
? = not tested

E = compatible after replacing silicone O-ring with an EPDM O-ring
V = compatible after replacing the silicone O-ring with a Viton O-ring

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 wish to filter by performing a trial filtration run before you begin with actual filtration.

2. Filter Holder, Cartridge Housing and O-ring Materials

	Glass	Poly-carbonate	Poly-propylene	PTFE	Stainless steel	EPDM O-ring	PTFE O-ring	Silicone O-ring	Viton O-ring
Solvents									
Acetone	•	○	•	•	•	•	•	–	–
Acetonitrile	•	?	•	•	•	○	•	–	•
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	•	–	•	•	•	•	•	–	○
Glycerine	•	○	•	•	•	•	•	•	•
n-Heptane	•	•	•	•	•	–	•	•	•
n-Hexane	•	•	•	•	•	–	•	–	•
Isobutanol	•	•	•	•	•	•	•	•	•
Isopropanol	•	○	•	•	•	•	•	•	•
Isopropyl acetate	•	•	•	•	•	•	•	–	–
Methanol, 98%	•	–	•	•	•	•	•	•	•
Methyl acetate	•	?	•	•	•	•	•	–	–
Methylene chloride	•	–	–	•	•	–	•	–	○
Methyl ethyl ketone	•	–	•	•	•	•	•	–	–
Methyl isobutyl ketone	•	–	?	•	•	–	•	–	–
Monochlorobenzene	•	–	•	•	•	–	•	–	•
Nitrobenzene	•	–	○	•	•	–	•	–	–
n-Pentane	•	•	•	•	•	–	•	–	•
Perchloroethylene	•	–	○	•	•	–	•	–	•
Pyridine	•	–	○	•	•	–	•	–	–
Carbon tetrachloride	•	–	○	•	•	–	•	–	•
Tetrahydrofuran	•	–	○	•	•	–	•	–	–
Toluene	•	–	•	•	•	–	•	–	○

Key to symbols see next page.

	Glass	Poly-carbonate	Poly-propylene	PTFE	Stainless steel	EPDM O-ring	PTFE O-ring	Silicone O-ring	Viton O-ring
Solvents									
Trichloroethane	•	–	?	•	•	–	•	–	•
Trichloroethylene	•	–	–	•	•	–	•	–	•
Xylene	•	–	○	•	•	–	•	–	○
Acids									
Acetic acid, 25%	•	•	•	•	•	•	•	•	–
Acetic acid, 96%	•	–	•	•	•	•	•	?	–
Hydrofluoric acid, 25%	–	–	•	•	–	○	•	–	○
Hydrofluoric acid, 50%	–	–	•	•	–	○	•	–	○
Perchloric acid, 25%	•	○	•	•	–	•	•	–	•
Phosphoric acid, 25%	•	○	•	•	○	•	•	–	•
Phosphoric acid, 85%	•	○	•	•	○	•	•	–	•
Nitric acid, 25%	•	–	•	•	–	○	•	–	•
Nitric acid, 65%	•	–	–	•	–	–	•	–	•
Hydrochloric acid, 25%	•	○	•	•	–	○	•	–	•
Hydrochloric acid, 37%	•	–	•	•	–	•	•	–	•
Sulfuric acid, 25%	•	•	•	•	○	•	•	–	•
Sulfuric acid, 98%	•	–	–	•	–	–	•	–	•
Trichloroacetic acid, 25%	•	○	•	•	–	•	•	–	–
Bases									
Ammonium, 1N	•	–	•	•	•	•	•	–	–
Ammonium hydroxide, 25%	•	–	•	•	•	•	•	•	–
Potassium hydroxide, 32%	•	–	•	•	•	•	•	○	○
Sodium hydroxide, 32%	•	–	•	•	•	•	•	○	•
Sodium, 1N	•	–	•	•	•	•	•	•	•
Aqueous solutions									
Formaline, 30%	•	•	•	•	•	•	•	○	•
Sodium hypochlorite, 5%	•	•	•	•	•	•	•	•	•
Hydrogen peroxide, 35%	•	•	•	•	•	•	•	•	•

Key to symbols

• = compatible
– = not compatible
○ = limited compatibility
? = not tested

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 wish to filter by performing a trial filtration run before you begin with actual filtration.

	Midisart® 2000	Minisart	Minisart HY	Minisart RC	Minisart SRP	Sartobran® 300	Sartobran® P Capsule	Sartofluor Capsule	Sartolab P20
Solvents									
Acetone	•	–	–	•	–	–	–	•	–
Acetonitrile	•	–	?	•	•	?	?	?	?
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	•	?	?	?	•	?	?	•	–
Glycerine	•	•	•	?	•	•	•	•	○
n-Heptane	•	•	•	?	•	•	•	•	•
n-Hexane	•	•	•	•	•	•	•	•	•
Isobutanol	•	○	○	•	•	○	○	•	○
Isopropanol	•	○	○	–	•	•	•	•	○
Isopropyl acetate	•	○	○	?	•	○	○	•	○
Methanol, 98%	•	–	–	•	•	•	•	•	–
Methyl acetate	•	–	–	?	•	–	–	•	–
Methylene chloride	•	–	–	•	•	–	–	○	–
Methyl ethyl ketone	•	–	–	•	•	–	–	•	–
Methyl isobutyl ketone	•	?	?	?	•	?	?	•	–
Monochlorobenzene	•	?	?	?	•	•	•	•	–
Nitrobenzene	•	?	?	?	•	○	○	•	–
n-Pentane	•	•	•	•	•	•	•	•	•
Perchloroethylene	•	○	○	?	•	○	○	•	–
Pyridine	•	–	–	?	•	–	–	•	–
Carbon tetrachloride	•	○	○	?	•	○	○	•	–
Tetrahydrofuran	•	–	–	•	•	–	–	○	–
Toluene	•	–	–	•	•	•	•	•	–

Key to symbols see next page.

	Midisart® 2000	Minisart	Minisart HY	Minisart RC	Minisart SRP	Sartobran® 300	Sartobran® P Capsule	Sartofluor Capsule	Sartolab P20
Solvents									
Trichloroethane	•	○	○	•	•	?	?	•	–
Trichloroethylene	○	?	?	?	○	–	–	–	–
Xylene	•	–	–	•	•	○	○	•	–
Acids									
Acetic acid, 25%	•	○	○	?	?	•	•	•	•
Acetic acid, 96%	•	–	–	?	•	–	–	•	–
Hydrofluoric acid, 25%	•	○	○	?	•	•	•	•	–
Hydrofluoric acid, 50%	•	○	○	?	•	–	–	•	–
Perchloric acid, 25%	•	?	?	?	•	–	–	•	–
Phosphoric acid, 25%	•	•	•	?	•	•	•	•	•
Phosphoric acid, 85%	–	?	?	?	–	○	○	–	○
Nitric acid, 25%	•	–	–	?	•	–	–	•	–
Nitric acid, 65%	•	–	–	?	•	–	–	○	–
Hydrochloric acid, 25%	•	–	–	?	•	–	–	•	–
Hydrochloric acid, 37%	•	–	–	?	•	–	–	•	–
Sulfuric acid, 25%	•	–	–	?	•	–	–	•	–
Sulfuric acid, 98%	•	–	–	?	•	–	–	•	–
Trichloroacetic acid, 25%	•	–	–	•	•	–	–	•	–
Bases									
Ammonium, 1N	•	•	•	?	•	•	•	•	–
Ammonium hydroxide, 25%	•	○	○	?	•	○	○	•	–
Potassium hydroxide, 32%	•	–	–	?	•	–	–	•	–
Sodium hydroxide, 32%	•	–	–	?	•	–	–	•	–
Sodium, 1N	•	○	○	?	•	○	○	•	–
Aqueous solutions									
Formaline, 30%	•	–	–	?	•	○	○	•	○
Sodium hypochlorite, 5%	•	•	•	?	•	–	–	•	•
Hydrogen peroxide, 35%	•	•	•	?	•	•	•	•	•

Key to symbols

• = compatible
○ = limited compatibility
– = not compatible
? = not tested

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 wish to filter by performing a trial filtration run before you begin with actual filtration.

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For the purpose of product development we reserve the right to make changes without notice.

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