

Microbiological Control



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Microsart® e.jet

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Microsart® Media

■ Microbiological Enumeration

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Microbial Enumeration is the quantitative determination of microorganisms present in a sample. To assure the quality of a manufacturing process, raw materials, in-process samples as well as final products are subject to microbiological testing. These samples are examined for microbial colony and |or particle counts to ensure product safety and compliance. Whether it is about testing the sterility of a final product or evaluating the microbial contamination of water – it is essential to be able to rely on the quality of results test after test, and at the same time be able to comply with the ever increasing and demanding requirements of international and national regulations.

The potential health impact of pathogens or other contaminations in water, beverages or pharmaceutical products makes the absolute reliability of the test results indispensable. With public safety in mind, Membrane Filtration is still the established method of choice for the detection and quantification of microorganisms in liquid samples. The principle of this method is based on the concentration of microorganisms from relatively large samples on the surface of the membrane filter, and on subsequently culturing these captured microbes on a nutrient medium.

Benefit from Sartorius' long-standing expertise in Microbiological Quality Control and choose from a wide range of dedicated products for Microbial Limit testing, and more. The comprehensive range of Membrane Filters, Filtration Units, Filtration Systems and Culture Media will help you reach the highest levels of safety with reproducible, reliable results for in-process and final release testing, whilst streamlining your workflow and simplifying your testing procedures.

Find out more about our filtration equipment, membrane filters and smart consumables which offer:

- Full compliance with regulations
- Total Ease of Use
- Systematic risk mitigation
- Highest Level of Safety and Efficiency

■ Gridded Membrane Filters

Cellulose Nitrate (Cellulose Mixed Ester)



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 pre-sterilized 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.

These membrane filters are in accordance with the following norms: ISO 7704, ISO 7899-2, ISO 8199, ISO 9308-1 and ISO 16266. In combination with Sartorius Nutrient Pads they offer excellent growth results and are in accordance with e.g. the AFNOR (French Standards), the APHA Standard Methods, the European Brewery Community, the European Drinking Water Guideline 98/83, the European Pharmacopoeia or the United States Pharmacopoeia.

The Membrane Filters

Cellulose Nitrate membranes are mixed cellulose ester membranes containing cellulose nitrate and cellulose acetate, a material which assures effective retention with high flow rates and optimal 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 neither inhibit nor enhance the growth. The various filter colors allow the best contrast to the colonies and particles for easy and reliable quantification and identification.

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 due to the special pore structure which thus allows shorter filtration times. Especially for the detection of E.coli High Flow Membranes are highly recommended as they achieve the best growth promotion results. As every Sartorius 0.45 µm membrane filter lot, these membranes are also tested and released according to ISO 7704.

Additional Membrane Filters

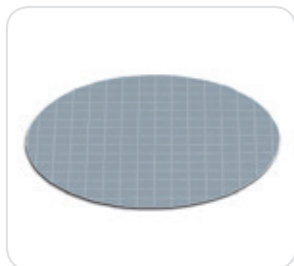
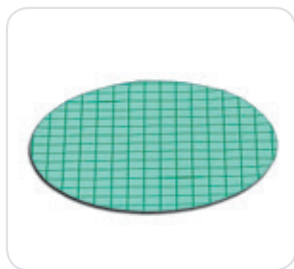
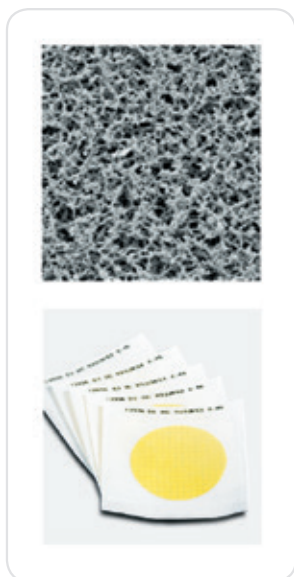
Cellulose nitrate (cellulose ester) membrane filters, gridded, non-sterile packaged (page 10).

Cellulose nitrate (cellulose ester) and cellulose acetate membrane filters, white, individually, sterile packaged (page 14).

Hydrophobic edge membranes are used mainly in the sterility testing of solutions containing antibiotics (page 16).

■ Gridded Membrane Filters

Cellulose Nitrate (Cellulose Mixed Ester), Individually, Sterile Packaged



Applications

Membrane filters for colony counting, particle testing and microscopy

Benefits

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
- Easy counting of colonies due to perfect visibility of grid lines

□ Specifications

| | |
|--|--|
| Design | 47 or 50 mm in diameter, white, grey or green and gridded |
| Growth Promotion Test acc. to ISO 7704 | <ul style="list-style-type: none"> - 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 107). |

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

□ Ordering Information

White Membrane with Black Grid, for Detection of Bacteria with Dyed Media, Particle Count & Microscopy, Type 114, Individually, Sterile Packaged

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

White Membrane with Green Grid, for Detection of Bacteria with Dyed Media, Particle Count and Microscopy, Type 139, Individually, Sterile Packaged

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

Green Membrane with Dark-Green Grid, Providing Optimal Contrast to Light-Colored or Transparent Bacteria Colonies, Type 138, Individually, Sterile Packaged

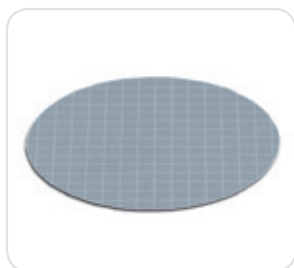
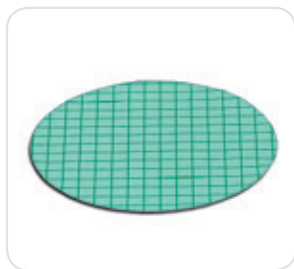
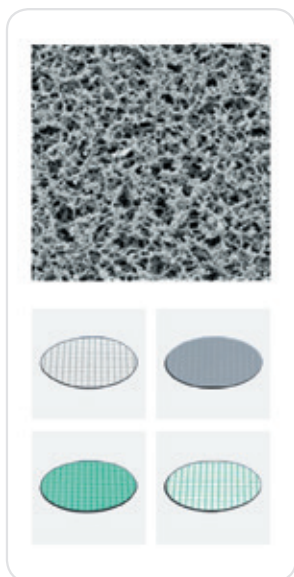
| | | | |
|---------|-------|-------|------------------|
| 0.45 µm | 47 mm | 100 | 13806--47----ACN |
| | 47 mm | 1,000 | 13806--47----ACR |
| | 50 mm | 100 | 13806--50----ACN |
| | 50 mm | 1,000 | 13806--50----ACR |

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

■ Gridded Membrane Filters

Cellulose Nitrate (Cellulose Mixed Ester), Non-Sterile Packaged



Applications

Membrane filters for colony counting, particle testing and microscopy

- Outstanding recovery rates for microorganisms
- 0.45 μm are acc. to ISO 7704
- Three different colors available

Benefits

Some of the advantages you will benefit from when using this type of membrane filter:

□ 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 107). |

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

□ Ordering Information

White Membrane with Black Grid, for Detection of Bacteria with Dyed Media, Particle Count & Microscopy, Type 114, Non-Sterile

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

White Membrane with Green Grid, for Detection of Bacteria with Dyed Media, Particle Count and Microscopy, Type 139, Non-Sterile

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

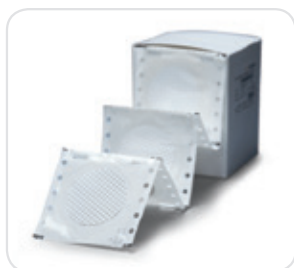
Green Membrane with Dark-Green Grid, Providing Optimal Contrast to Light-Colored or Transparent Bacteria Colonies, Type 138, Non-Sterile

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

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

■ Microsart® e.motion Membrane Filters



The Microsart® e.motion membrane filters specifically designed for the use with the Microsart® e.motion dispenser allow simple insertion and faster exchange of filter types, 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 for easy opening and sealing for storage. Microsart® e.motion – reliable help in your lab.

Benefits

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. See page 8

□ Ordering Information

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

| Membrane Filter Color Grid Color | Pack Size | Order No. |
|---------------------------------------|-------------------|------------------|
| White black | 0.2 µm | 11407Z-47----SCM |
| White black | 0.2 µm | 11407Z-50----SCM |
| White black | 0.45 µm High Flow | 114H6Z-47----SCM |
| White black | 0.45 µm High Flow | 114H6Z-50----SCM |
| White black | 0.45 µm | 11406Z-47----SCM |
| White black | 0.45 µm | 11406Z-50----SCM |
| White black | 0.8 µm | 11404Z-47----SCM |
| White black | 1.2 µm | 11403Z-47----SCM |
| White black | 1.2 µm | 11403Z-50----SCM |
| White black | 3 µm | 11402Z-47----SCM |
| White green | 0.45 µm High Flow | 139H6Z-47----SCM |
| White green | 0.45 µm | 13906Z-47----SCM |
| White green | 0.45 µm | 13906Z-50----SCM |
| Green dark green | 0.45 µm | 13806Z-47----SCM |
| Green dark green | 0.45 µm | 13806Z-50----SCM |
| Gray* white | 0.45 µm High Flow | 130H6Z-50----SCM |
| Gray* white | 0.45 µm | 13006Z-47----SCM |
| Gray* white | 0.45 µm | 13006Z-50----SCM |
| Gray* white | 0.65 µm | 13005Z-47----SCM |
| Gray* white | 0.65 µm | 13005Z-50----SCM |
| Gray* white | 0.8 µm | 13004Z-47----SCM |
| Gray* white | 0.8 µm | 13004Z-50----SCM |

* Gray membranes after wetting black

Microsart® e.motion Membrane Filters are also available together with Nutrient Pads (page 21).

■ Microsart® e.motion Dispenser



Fully automated membrane filter dispenser for high throughput of membrane filters.

The membrane filters are automatically individually removed from their sterile packaging – either in a touch-free mode via an optical sensor or at the touch of a button. A foot switch can be optionally connected to the dispenser. Thanks to their motorized traction roller, each filter is quickly and reliably dispensed.

A dispensing operation is triggered when the optical sensor detects approaching tweezers. It's simple and fast.

Applications

Membrane filters for colony counting, particle testing and microscopy

Benefits

The clear, compact design of the dispenser allows quick and easy cleaning.

The dispenser's low weight makes it easy to be transported. Both its functions and design are ideal, giving you the versatility and flexibility you need in your lab.

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
- Rapid and reliable transport
- Easy insertion of the filter band
- Easy-to-clean
- Robust
- Small footprint

□ Specifications

| | |
|--------------------------|--|
| 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 |

□ Ordering Information

| Description | Order No. |
|---|------------|
| Microsart® e.motion dispenser, fully automated membrane filter dispenser. | 16712 |
| Foot switch for Microsart® e.motion dispenser | 1ZE---0028 |

■ Ungridded Membrane Filters

Cellulose Nitrate and Cellulose Acetate, White, Individually, Sterile Packaged



Sterile, individually packed filters have long become standard for routine microbiological quality control. They are pre-sterilized and ready-to-use and save preparatory time. As they are individually packed, they avoid the possibility of contaminating remaining filters in opened packs is being prevented 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 optimal colony growth or cellulose acetate, a material which combines high flow rates and thermal stability with very low adsorption characteristics.

Applications

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

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.

Benefits

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 107). |

□ Ordering Information

Cellulose Nitrate Membrane Filters, White, for Colony Counting, Sterility Testing, Particle Count & Microscopy, Type 113, Individually, Sterile Packaged

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

Cellulose Acetate* Membrane Filters, White, for Colony Counting, Sterility Testing, Particle Count & Microscopy, Type 111, Individually, Sterile Packaged

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

* If cellulose nitrate is not compatible

Hydrophobic Edged Membrane Filters

Cellulose Nitrate (Cellulose Mixed Ester), Cellulose Acetate and Regenerated Cellulose Individually, Sterile & 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

Benefits

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 | <ul style="list-style-type: none"> - 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 107, Cellulose Acetate type 111 and Regenerated Cellulose type 184. |

□ Ordering Information

Cellulose Nitrate Membrane Filters, White with Black Grid, for Colony Counting & Sterility Testing, Type 131, Pack Size 100

| Pore Size | Diameter | Hydrophobic Edge | Packaged | Order No. |
|-----------|----------|------------------|-----------------------------------|------------------|
| 0.2 µm | 47 mm | 3 mm | Individually, sterile packaged | 13107--47----ACN |
| | 50 mm | 3 mm | | 13107--50----ACN |
| 0.2 µm | 25 mm | 3 mm | Non-sterile | 13107--25-----N |
| | 47 mm | 3 mm | | 13107--47-----N |
| | 47 mm | 6 mm | | 13107--47----HCN |
| | 50 mm | 3 mm | | 13107--50-----N |
| 0.45 µm | 47 mm | 3 mm | Individually, sterile packaged | 13106--47----ACN |
| | 47 mm | 6 mm | | 13106--47----HEN |
| | 50 mm | 3 mm | | 13106--50----ACN |
| 0.45 µm | 25 mm | 3 mm | Non-sterile | 13106--25-----N |
| | 47 mm | 3 mm | | 13106--47-----N |
| | 47 mm | 6 mm | | 13106--47----HCN |
| | 50 mm | 3 mm | | 13106--50-----N |
| 8 µm | 47 mm | 3 mm | Non-sterile | 13101--47-----N |
| | 50 mm | 3 mm | | 13101--50-----N |

Cellulose Nitrate Membrane Filters, White, for Colony Counting & Sterility Testing, Type 131, Pack Size 100

| | | | | |
|------|-------|------|-------------|------------------|
| 8 µm | 50 mm | 3 mm | Non-sterile | 13101--50----AHN |
|------|-------|------|-------------|------------------|

Cellulose Acetate* Membrane Filters, White with Black Grid, for Colony Counting & Sterility Testing, Type 135, Pack Size 100

| | | | | |
|---------|-------|------|-----------------------------------|------------------|
| 0.2 µm | 47 mm | 3 mm | Individually, sterile packaged | 13507--47----ACN |
| 0.2 µm | 47 mm | 3 mm | Non-sterile | 13507--47-----N |
| 0.45 µm | 47 mm | 3 mm | Individually, sterile packaged | 13506--47----ACN |
| | 50 mm | 3 mm | | 13506--50----ACN |
| 0.45 µm | 47 mm | 3 mm | Non-sterile | 13506--47-----N |
| | 47 mm | 6 mm | | 13506--47----HCN |

Cellulose Acetate* Membrane Filters, White with Black Grid, for Colony Counting & Sterility Testing, Type 135, Pack Size 100 Packaged of 10 Discs per Sleeve

| | | | | |
|---------|-------|------|---------|------------------|
| 0.45 µm | 47 mm | 3 mm | Sterile | 13506--47----ALS |
|---------|-------|------|---------|------------------|

Regenerated Cellulose* Membrane Filters, White, for Colony Counting & Sterility Testing, Type 184, Pack Size 100

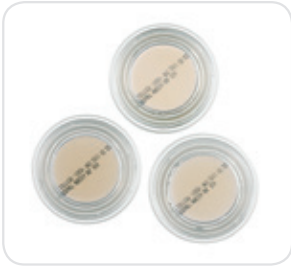
| | | | | |
|---------|-------|------|-----------------------------------|------------------|
| 0.45 µm | 47 mm | 3 mm | Individually, sterile packaged | 18406--47----ACN |
| | 47 mm | 4 mm | | 18406--47----HDN |

* If cellulose nitrate is not compatible



■ Microsart® @media

Advanced System for Agar and Membrane Transfer



Microsart® @media are media dishes pre-filled with different agar media types, sterile packaged and ready-to-use. Together with the Microsart® @filter units, they introduce a brand new agar and membrane transfer concept for the Microbial Limit Test. The innovative active lid of Microsart® @media allows a touch-free membrane transfer from the Microsart® @filter base and thus reduces the risk of secondary contamination to an absolute minimum.

Applications

Microsart® @media and the Microsart® @vance® product line enhance the safety of microbiological quality control in biopharmaceutical laboratories.

Features

Innovative Membrane Transfer Concept

The active lid enables touch-free membrane transfer and, therefore, reduces the risk of secondary contamination. Thanks to its special design, no air bubbles are entrapped.

Benefits

Easy Handling

Fits perfectly onto the Microsart® @filter base and thus allows an easy and reliable transfer of the membrane filter onto the agar. No powerful cracking of plastic is needed!

Safe & Reliable

Touch-free membrane transfer rules out manipulation and handling, minimizing major sources of secondary contamination. Results in best growth conditions and reliable results.

Time-saving

Innovative click-fit closure permits fast and easy removal of the funnel after filtration.

Easy and Fast Levelling

by two simple-to-adjust feet and an outstandingly simple-to-read level indicator on the front.



Ordering Information

| Media Type | Target Microorganisms | Typical Incubation Time and Temperature | Order No. |
|--------------------------|-----------------------|--|------------------|
| TSA (Tryptic Soy Agar) | Total Count | 48 to 72 hrs (USP) or 1 to 5 days (EP) at 30 to 35°C | 14313--47----ACN |
| SDA (Sabouraud Dextrose) | Yeasts and molds | 5 to 7 days at 20 to 25°C | 14314--47----ACN |
| R2A | Total Count | 5 to 7 days at 20 to 28°C | 14322--47----ACN |

Accessories

| Description | Order No. |
|---|---------------|
| Microsart® e.jet Transfer Pump | 166MP-4 |
| Combi.jet manifold | 16848-CJ |
| Microsart® Base 47 mm | 1ZU---0002 |
| Silicone Pressure Tubing, pressure sided, 1 meter lengths | 1ZAS--0007 |
| Minisart® SRP25 vent filters | 17575-----ACK |

■ Nutrient Pad Sets

Dehydrated Media Pads in Petri Dishes, with Suitable Membrane Filters for Economical, Time-Saving Microbiological Quality Control



Sartorius Nutrient Pad Sets have been used successfully in the membrane filter method for 30 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.



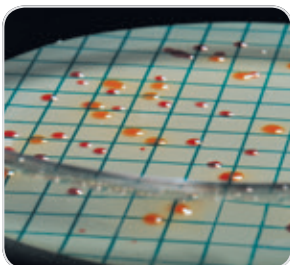
Ready-to-Use up to 24 Months

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 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 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.



Inclusive Membranes

All Nutrient Pad Set types are supplied with the suitable membrane filters, which are also pre-sterilized and individually packaged. Nutrient Pad Sets are also available with Microsart® e.motion Membrane Filters which are specially designed for the Microsart® e.motion Dispenser and can be conveniently inserted. The membrane filters then are automatically removed from their sterile package. All membrane filters tailored to meet the special requirements of microbial detection are available with 47 mm or 50 mm diameters.

Benefits

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.

□ Ordering Information

| NPS Type (Filter Type) ¹ | Determination of | Order No. ² |
|--|-------------------------|------------------------|
| 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 (order no. -RDN = Microsart® e.motion Membranes) | | |
| Caso (1) | Total count | 14063--47-----N |
| R2A (1) | Total count | 14084--47----RDN |
| R2A (1) | Total count | 14084--47-----N |
| Standard TTC (1) | Total count | 14055--47----RDN |
| Standard TTC (1) | Total count | 14055--47-----N |
| Standard TTC I mod. (1) | Total count | 14085--47-----N |
| Standard (1) | Total count | 14064--47-----N |
| TGE Tryptone Glucose Extract (1) | Total count | 14076--47----RDN |
| TGE Tryptone Glucose Extract (1) | Total count | 14076--47-----N |
| Yeast Extract (1) | Total count | 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 (order no. -RDN = Microsart® e.motion Membranes) | | |
| Chromocult (7) | E. coli and coliforms | 14087--47----RDN |
| Chromocult (7) | E. coli and coliforms | 14087--47-----N |
| ECD (2) | E. coli | 14082--47-----N |
| Endo (9) | E. coli and coliforms | 14053--47----RDN |
| Endo (9) | E. coli and coliforms | 14053--47-----N |
| MacConkey (2) | Enterobacteria, E. coli | 14097--47-----N |
| m FC (2) | E. coli and coliforms | 14068--47-----N |
| m FC in closed petri dishes (2) | E. coli and coliforms | 14068--50----PDN |
| Teepol Lauryl Sulphate (2) | E. coli and coliforms | 14067--47----RDN |
| Teepol Lauryl Sulphate (2) | E. coli and coliforms | 14067--47-----N |
| Tergitol TTC (2) | E. coli and coliforms | 14056--47----RDN |
| Tergitol TTC (2) | E. coli and coliforms | 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 (order no. -RDN = Microsart® e.motion Membranes) | | |
| Azide KF Strep (1) | Enterococci | 14051--47----RDN |
| Azide KF Strep (1) | Enterococci | 14051--47-----N |
| Bismuth Sulfite (1) | Salmonellae | 14057--47-----N |

| NPS Type (Filter Type) ¹ | Determination of | Order No. ² |
|--|-------------------------------------|------------------------|
| 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 (order no. -RDN = Microsart® e.motion Membranes) | | |
| Cetrimide (2) | <i>Pseudomonas aeruginosa</i> | 14075--47----RDN |
| Cetrimide (2) | <i>Pseudomonas aeruginosa</i> | 14075--47-----N |
| Chapman (2) | Staphylococci, <i>Staph. aureus</i> | 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 (order no. -RDN = Microsart® e.motion Membranes) | | |
| Lysine (3) | Wild yeasts | 14061--47-----N |
| Malt Extract (8) | Yeasts and molds | 14086--47----CCN |
| Malt Extract (6) | Yeasts and molds | 14086--47-----N |
| Sabouraud (10) | Yeasts and molds | 14069--47-----N |
| Schaufus Pottinger m green yeast and mold (4) | Yeasts and molds | 14070--47-----N |
| Schaufus Pottinger m green yeast and mold (5) | Yeasts and molds | 14072--47-----N |
| Schaufus Pottinger m green yeast and mold (6) | Yeasts and molds | 14080--47----RDN |
| Schaufus Pottinger m green yeast and mold (6) | Yeasts and molds | 14080--47-----N |
| Schaufus Pottinger m green yeast and mold (3) | Yeasts and molds | 14083--47-----N |
| Schaufus Pottinger m green yeast and mold (8) | Yeasts and molds | 14091--47----RDN |
| Schaufus Pottinger m green yeast and mold (8) | Yeasts and molds | 14091--47-----N |
| Wallerstein Nutrient WL Nutrient (2) | Yeasts and molds and bacteria | 14089--47-----N |
| Wort (3) | Yeasts and molds | 14058--47----RDN |
| Wort (3) | Yeasts and molds | 14058--47-----N |
| Wort (8) | Yeasts and molds | 14092--47----RDN |

| NPS Type (Filter Type) ¹ | Determination of | Order No. ² |
|---|--|------------------------|
| 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 (order no. -RDN = Microsart® e.motion Membranes) | | |
| Glucose Tryptone (2) | Thermophilic spore formers and mesophilic bacteria | 14066--47-----N |
| Jus de Tomate Tomato Juice (1) | Leuconostoc oenos and other wine-spoiling organ. | 14079--47-----N |
| MRS (1) | Lactobacilli and other soft drink-spoiling microorganisms | 14077--47-----N |
| Orange Serum pH 5.5 (1) | Acid-tolerant microorganisms | 14062--47----RDN |
| Orange Serum pH 5.5 (1) | Acid-tolerant microorganisms | 14062--47-----N |
| Orange Serum pH 3.2 (6) | Acid-tolerant microorganisms | 14096--47----RDN |
| Orange Serum pH 3.2 (6) | Acid-tolerant microorganisms | 14096--47-----N |
| VLB-S7-S (2) | Lactobacilli and Pediococci and other beer-spoiling microorganisms | 14059--47-----N |
| Weman (1) | Mesophilic slime-forming bacteria esp. Leu. mesenteroides | 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

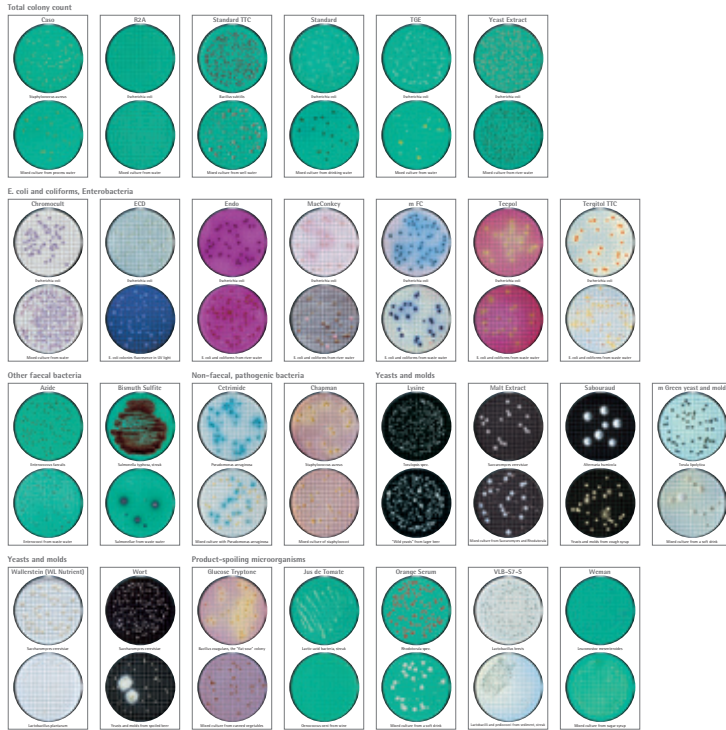
| | | |
|---|--|-----------------|
| Mixed types: Endo, Standard, Wort (1, 2, 3) | E. coli and coliforms, total count, yeasts and molds | 14095--47-----N |
|---|--|-----------------|

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 (ideal for E.coli)
 - (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 and NPS with Microsart® e.motion Membrane Filters on request.

Nutrient Pad Sets



| Typical Application Examples | | | |
|--|--|--|------------------------------|
| Product | Detection and enumeration of... | Nutrient Pad type | |
| Beer | Lactobacilli and Pediococci and other lactic acid-producing organisms | W5B-S1-5 | |
| | Total colony count | Standard, Standard TTC | |
| | W5B yeast | Yeast | |
| Foods | Yeasts and molds | Multi Extract*, Wallstone Nutrition, Wort | |
| | Acid-tolerant microorganisms | Orange Serum | |
| | Enterobacteria, E. coli and coliforms | Chemicals, ECD, Ends, MacConkey, m FC, Topogal Laxaral Sulphate, Topogal TTC | |
| | Enterococci, Enterococcus faecalis | Arabin 147 Strept | |
| | Pseudomonas aeruginosa | Citrimide | |
| | Salmonellae | Bismuth Sulfite | |
| | Staphylococci, Staphylococcus aureus | Chapsam | |
| | Thermophilic spore formers and mesophilic aerobes | Glucose Tryptone | |
| | Total colony count | Case, Standard, Standard TTC, TDE Tryptone-Glucose Extract | |
| | Yeasts and molds | Multi Extract, Wort | |
| | Fruit juice | Enterobacteria, E. coli and coliforms | Ends, MacConkey, Topogal TTC |
| | Oenococcus and other product spoiling organisms | Ans de Serrate Serrate Juice | |
| | Yeasts and molds | Multi Extract, m Green yeast and mold Scheuflus Putrefige, Wallstone Nutrition, Wort | |
| Milk | E. coli and coliforms | Ends | |
| Enterococci, Enterococcus faecalis | Arabin 147 Strept | | |
| Salmonellae | Bismuth Sulfite | | |
| Pharmaceuticals, MFL, wine materials and cosmetics | Enterobacteria, E. coli | MacConkey | |
| Enterococci, Enterococcus faecalis | Arabin 147 Strept | | |
| Pseudomonas aeruginosa | Citrimide (cosmetics only) | | |
| Salmonellae | Bismuth Sulfite | | |
| Staphylococci, Staphylococcus aureus | Chapsam | | |
| Total colony count | Case, RZA | | |
| Yeasts and molds, Candida albicans | Sakaguchi | | |
| Soft drinks, concentrates | Acid-tolerant microorganisms, lactic-acid bacteria | Orange Serum, W5B-S1-5 | |
| Enterobacteria, E. coli and coliforms | Ends, MacConkey | | |
| Mesophilic slow-forming bacteria, Lactosporidae | Weinan | | |
| Total colony count | Standard*, Standard TTC*, TDE Tryptone-Glucose Extract | | |
| Yeasts and molds | Multi Extract, m Green yeast and mold Scheuflus Putrefige, Wallstone Nutrition, Wort | | |
| Sugar, sugar products | E. coli and coliforms | Ends | |
| Mesophilic slow-forming bacteria, Lactosporidae | Weinan | | |
| Thermophilic spore formers and mesophilic bacteria | Glucose Tryptone | | |
| Yeasts and molds | Multi Extract*, Scheuflus Putrefige m Green yeast and mold Wort | | |
| Water, general quality, mineral waters, natural water, waste water | Acid-tolerant microorganisms, lactic-acid bacteria | Orange Serum | |
| Enterobacteria, E. coli and coliforms | Chemicals, ECD, Ends, MacConkey, m FC, Topogal Laxaral Sulphate, Topogal TTC | | |
| Enterococci, Enterococcus faecalis | Arabin 147 Strept | | |
| Pseudomonas aeruginosa | Citrimide | | |
| Salmonellae | Bismuth Sulfite | | |
| Staphylococci, Staphylococcus aureus | Chapsam | | |
| Total colony count | Case, RZA, Standard, Standard TTC, TDE Tryptone-Glucose Extract, Yeast Extract | | |
| Yeasts and molds, Candida albicans | Sakaguchi | | |
| Wine | Orange Serum, Wort (bottly-sterilized with 5-8% ethanol) | Orange Serum | |
| Acid-tolerant microorganisms, lactic-acid bacteria | Orange Serum | | |
| Oenococcus and other wine spoiling microorganisms | Ans de Serrate Serrate Juice | | |
| Yeasts and molds | Multi Extract, m Green yeast and mold Scheuflus Putrefige, Wallstone Nutrition, Wort | | |

turning science into solutions

Nutrient Pad Set Poster

The photo shows a poster, original size 70 cm x 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.

*These NPS types are suitable for the determination of the mentioned microorganisms, although the results are not explicitly declared in references. The interpretation of the typical growth or any pattern other than typical appearance of the mentioned microorganisms in particular cases, color and shape of the colonies could vary from the expected habits. Further tests may be necessary to exclude the presence of other microorganisms. Nutrient Pad Sets should not be used for environmental and/or industrial storage medium as per customer. Read the use of the products. Nutrient Pad Sets NPS are subject to continuous product improvement as part of our product development program to adapt our products with changing application requirements. For correct specifications and latest release version please visit our homepage under: www.sartorius-tdi.de.com/NPSCards.

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■ 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.



□ Ordering Information

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 |



Absorbent Pads

Sartorius 1.4 mm thick absorbent pads are wetted with the appropriate liquid culture medium before a membrane filter is placed on them. They come pre-sterilized in plastic magazines, which fit onto the **Sartorius** 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.

Liquid Broth Media, for Drinking Water Analysis in 100 ml Bottles, 4 Bottles per Box

| Determination of | Media Type | Order No. |
|--|---------------|-------------|
| Lactose fermenting Enterobacteria (E.coli and coliform bacteria) | Lactose Broth | 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, DIN EN ISO 16266, 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. Especially E. coli shows best growth promotion on High Flow Membranes.

Applications

Microbial enumeration, particle testing and microscopy

Benefits

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 |

□ Ordering Information

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 on 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

| Pore Size | Membrane Filter* Color Grid Color | Order No. |
|-------------------|--|------------------|
| 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, polypropylene with a silicone O-ring | Biosart® 100 Monitor onto Sartorius stainless steel base 1ZU---0002 Microsart® Base 47 mm (stainless steel base for Combisart® and Microsart® Combi.jet) | 16424 |
| Biosart® 100 Adapter, silicone | Biosart® 100 Monitor onto Sartorius stainless steel frits e.g. 16840 (Combisart® single base, 50 mm) or onto 16841 (individual base) | 16414 |
| 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 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

Microbial enumeration

Benefits

Safe & Reliable

- Pre-sterilized media
- Certificate of Quality for every batch
- In compliance with international standards
- Consistently recovery

Economical

- Ready-to-use
- Long shelf life

□ Ordering Information

Biosart® 100 Nutrient Media, 2.5 ml, Individually, Sterile-Packaged in Ampoules, 50 Units

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

■ Microsart® Funnel 100 | Microsart® Funnel 250

Sterile Disposable Funnels with Click-Fit



In microbiological quality control, sterility of the equipment used for processing samples is a necessary basic requirement. The re-useable 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 which often is too laborious for routine use. A disposable filter funnel is the ideal choice for more reliability and time saving.

Description

Microsart® Funnels are sterile plastic funnels, which are available for the filtration of various sample volumes. They allow quick performance of the filtration steps required in the routine testing of water, food and beverages, pharmaceutical and cosmetic products.

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

Microsart® Base 47 mm

The Microsart® Base 47 mm is the perfect addition to existing Combisart® and Microsart® Combi.jet stainless steel manifolds. The slightly recessed frit ensures the plane positioning of the membrane filter. Recessed parts for the tweezers at the rim of the base 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. Even after opening the bag, the remaining funnels are protected from secondary contamination.

Applications

Colony counting, particle testing and microscopy

Benefits

Some of the advantages you will benefit from when using Microsart® Funnel 100 | 250:

– Reliable Results

Use a new, sterile funnel for each test for secure prevention of cross contamination!

– Time-Saving

Just change the funnel, rather than spending time and money sanitizing it!

– Simpler Handling

No more flaming, thus no holding of hot funnels! The clear material allows easy visualisation of the status of filtration, particularly useful in routine testing.

□ Specifications

| | |
|-------------------------|--|
| Material | Polypropylene |
| Capacity | 100 ml, graduations at 20, 50 and 100 ml 250 ml, graduations at 50, 100, 200 and 250 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 |

□ Ordering Information

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 250, Sterile Disposable Funnels, 250 ml, 96 Units

| Description | Order No. |
|---|-----------------|
| Microsart® Funnel 250, sterile in 6 sealed bags | 16A07--25-----N |



Accessories and Replacement Parts

| Description | Order No. |
|--|------------|
| Microsart® Funnel Dispenser Funnel dispenser for secure removal of single, sterile Microsart® Funnels | 16A08 |
| Microsart® Base 47 mm, with frit, stainless steel base for Combisart® and Microsart® Combi.jet Optimized for the use with 47 mm membranes, Click-Fit closure for Microsart® Funnel, Microsart® @filter and other funnel types sealed by bayonet closure | 1ZU---0002 |
| Silicone O-ring for Microsart® Base 47 mm male thread (pack size 3) | 6980274 |
| Replacement frit for Microsart® Base, stainless steel | 1ZU---0001 |

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

■ Microsart® @filter 100 | Microsart® @filter 250

Sterile Disposable Filter Units for Advanced Colony Counting



The pharmaceutical and biotech industries are driven by the need to optimize their work flows and increase efficiency without compromising their level of safety. Products and raw materials used in the pharmaceutical or biotech industry require control of microbial levels during processing and handling. All components of the filtration system must comply with international guidelines, such as USP, EP or ISO standards.

Description

Microsart® @filter 100 and 250 filter units are a ready-to-use combination of funnel, filter base and gridded membrane in one unit. The range of Microsart® @filter types has been tailored to meet individual needs: It is possible to choose between two volume sizes, 100 ml and 250 ml, different pore sizes and different filter colors for contrasting backgrounds during evaluation. The filter units exist as tray versions with lids or are stacked in bags for safe removal using the Microsart® Funnel Dispenser.

Despite the diversity of Microsart® @filters one thing is common: The optimal design.

- Click-Fit fastening allows for easy removal of funnels
- Leaking-free procedure due to innovative Click-Fit and bayonet closures
- Bayonet closure allows for easy mounting and removal of units
- Sterile Filter Base with recesses allows for simple membrane removal
- Innovative geometry of the funnel allows for effective rinsing after filtration (no sample residue is left in the funnel)

They have been specifically developed for the detection and enumeration of microorganisms in pharmaceuticals, biopharmaceuticals and cosmetics.

Microsart® @vance®

The Microsart® product family consists of all the most recent products from Sartorius for microbiological analysis, which are especially characterized by innovation and clever design.

Microsart® @filter not only saves time and labor costs but minimizes the risk of secondary contamination – that's advanced colony counting by Sartorius.

Microsart® Funnel Dispenser

The Funnel Dispenser for secure removal of single, sterile Microsart® @filter. Even after opening the bag, the remaining funnels are protected from secondary contamination.

Applications

Filtration and enumeration of microorganisms in liquids like pharmaceuticals, biopharmaceuticals and cosmetics.

Benefits

Some of the advantages you will benefit from when using Microsart® @filter units:

Safe and Reliable

- **Sterile Packaged**
Sterilization at the point of use is not required
- **Fully Disposable Base and Funnel**
Preparation- and sterilization-free procedure reduces the risk of secondary contamination
- **Optimized Design and Materials**
No liquid remains after filtration, eliminates the need of rinsing

Easy Handling

- **Click-Fit Closure**
Fast in routine analysis, eliminates the risk of leakage

Economy

- **Adaptable on Combisart®**
Given flexibility, no additional investment required
- **Transparent Funnel Material**
Visibility of the complete filtration

□ Specifications

| | |
|-------------------------|---|
| Materials | Funnel: Polypropylene, Base: ABS (Acrylnitril-Butadien-Styrol), Membrane filter: Cellulose Nitrate (C. mixed Ester), Regenerated Cellulose; choice of various colors and pore sizes |
| Capacity | 100 ml, graduations at 20, 50 and 100 ml 250 ml, 50, 100, 200 and 250 ml graduations |
| Filter diameter | 47 mm, prefilter 40 mm (particle testing only) |
| Filtration area | 13.2 cm ² |
| Max. operating pressure | Vacuum only |
| Sterilization | Gamma irradiation |
| Lot certificate | Recovery rate, sterility and performance test |

□ Ordering Information



Microsart® @filter 100, Sterile Disposable Filter Units with Lid, 47 mm, 100 ml, Packaged on Trays, Ideal for the Use in Clean Benches, 24 Units

| Pore Size | Membrane Filter* Color Grid Color | Order No. |
|-----------------|-------------------------------------|-------------------|
| 0.2 | CN white black | 16D01--10-07--TG |
| 0.45, High Flow | CN white black | 16D01--10-H6--TG |
| 0.45, High Flow | CN gray white** | 16D03--10-H6--TG |
| 0.45 | CN green dark green | 16D02--10-06--TG |
| 0.45 | RC white (w/o grid) | 16D05--10-06--TG |
| 0.45 | CN white black | 16D01--10--06--TG |

Microsart® @filter 250, Sterile Disposable Filter Units with Lid, 47 mm, 250 ml, Packaged on Trays, Ideal for the Use in Clean Benches, 16 Units

| Pore Size | Membrane Filter* Color Grid Color | Order No. |
|-----------------|-------------------------------------|-------------------|
| 0.2 | CN white black | 16D01--25-07--TF |
| 0.45, High Flow | CN white black | 16D01--25-H6--TF |
| 0.45, High Flow | CN gray white** | 16D03--25-H6--TF |
| 0.45 | CN green dark green | 16D02--25-06--TF |
| 0.65 | CN gray white** | 16D03--25-05--TF |
| 0.45 | CN white black | 16D01--25--06--TF |

Microsart® @filter 100, Sterile Disposable Filter Units, 47 mm, 100 ml, Stacked and

Packaged in Bags, Ideal for the Use with Microsart® Funnel Dispenser, 60 Units

| Pore Size | Membrane Filter* Color Grid Color | Order No. |
|-----------------|-------------------------------------|-------------------|
| 0.2 | CN white black | 16D01--10-07--BL |
| 0.45, High Flow | CN white black | 16D01--10-H6--BL |
| 0.45, High Flow | CN gray white** | 16D03--10-H6--BL |
| 0.45 | CN green dark green | 16D02--10-06--BL |
| 0.45 | RC white (w/o grid) | 16D05--10-06--BL |
| 0.45 | CN white black | 16D01--10--06--BL |

Microsart® @filter 250, Sterile Disposable Filter Units, 47 mm, 250 ml, Stacked and Packaged in Bags, Ideal for the Use with Microsart® Funnel Dispenser, 48 Units

| Pore Size | Membrane Filter* Color Grid Color | Order No. |
|-----------------|-------------------------------------|-------------------|
| 0.2 | CN white black | 16D01--25-07--BK |
| 0.45, High Flow | CN white black | 16D01--25-H6--BK |
| 0.45, High Flow | CN gray white** | 16D03--25-H6--BK |
| 0.45 | CN green dark green | 16D02--25-06--BK |
| 0.65 | CN gray white** | 16D03--25-05--BK |
| 0.45 | CN white black | 16D01--25--06--BK |

Accessories

| Description | Order No. |
|--|------------|
| Lids for Microsart® @filter 100 and 250, Pack size: 100 (4 bags with 25 pieces each), gamma sterilized | 1ZSF-K0007 |
| Microsart® Funnel Dispenser | 16A08 |

Funnel dispenser for secure removal of single, sterile Microsart® @filter packaged in bags.

* CN = Cellulose Nitrate (Cellulose ester), RC = Regenerated Cellulose

** Gray membranes after wetting black

■ Biosart® 250 Funnels



In microbiological quality control, sterility of the equipment used for processing samples is a necessary basic requirement. The reusable 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 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

Microbial enumeration, particle testing and microscopy

Benefits

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 |

□ Ordering Information

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 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 Microsart® Funnels 100 and 250, Microsart® @filter 100 and 250, 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 outlet of the 1- and 3-branch manifolds are newly Quick Connection Nipples, which could be used together with Quick Connection Couplings (more information under Microsart® Combi.jet) or as hose nipples for vacuum tubings. 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 allow 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 autoclave them. This method increases reliability and saves sterilization capacity.

The Right Equipment for Your Application

In connection with the single base 16840 (for 50 mm membranes) 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.

Alternatively to 16840 the Microsart® Base 1ZU---0002 is highly recommended for all 47 mm membrane filters, Microsart® Funnels and for Microsart® @filter.

The adapter 16424 ensures that the Biosart® 100 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 turnable single base for 50 mm membranes 16840 or the Microsart® Base 47 mm 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 membrane after 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.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 (1- and 3-branches only) | Quick Connection Nipple DN 7 (tubings with DN 10 are connectable) |
| Outlet (6-branch) | Hose nipple DN 10 |

□ Ordering Information

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

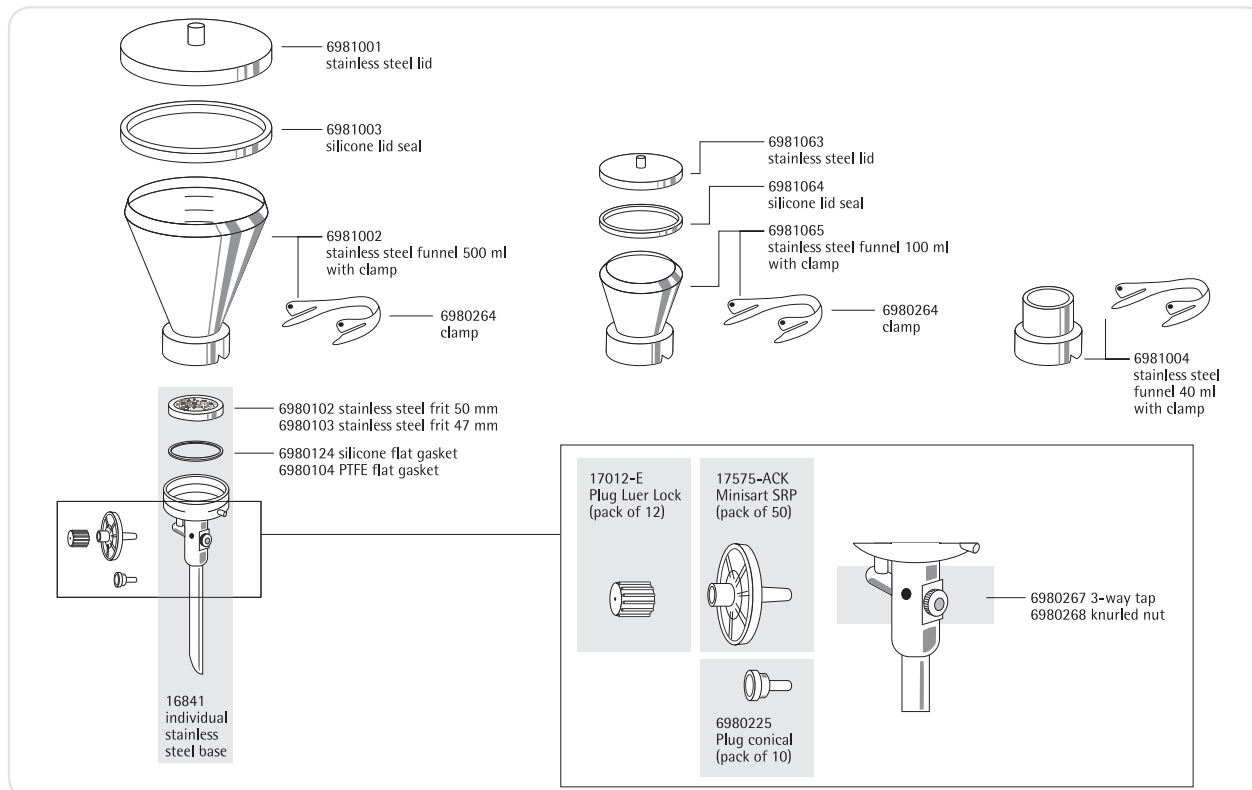
| Description | Order No. |
|--|------------|
| Combisart® individual base, stainless steel, with frit (50 mm), to accommodate stainless steel funnels and Biosart® 100 250 | 16841 |
| Combisart® 1-branch stainless steel manifold, without frit | 16844 |
| Combisart® 3-branch stainless steel manifold, without frits | 16842 |
| Combisart® 6-branch stainless steel manifold, without frits | 16843 |
| Combisart® Single base with frit (for 50 mm membranes), stainless steel, accommodate stainless steel funnels and Biosart® 100 250 | 16840 |
| Microsart® Base 47 mm, with frit, stainless steel base for Combisart® and Microsart® Combi.jet Optimized for the use with 47 mm membranes, Click-Fit closure for Microsart® Funnel, Microsart® @filter and other funnel types sealed by bayonet closure | 1ZU---0002 |

Combisart® Hardware Set-Ups

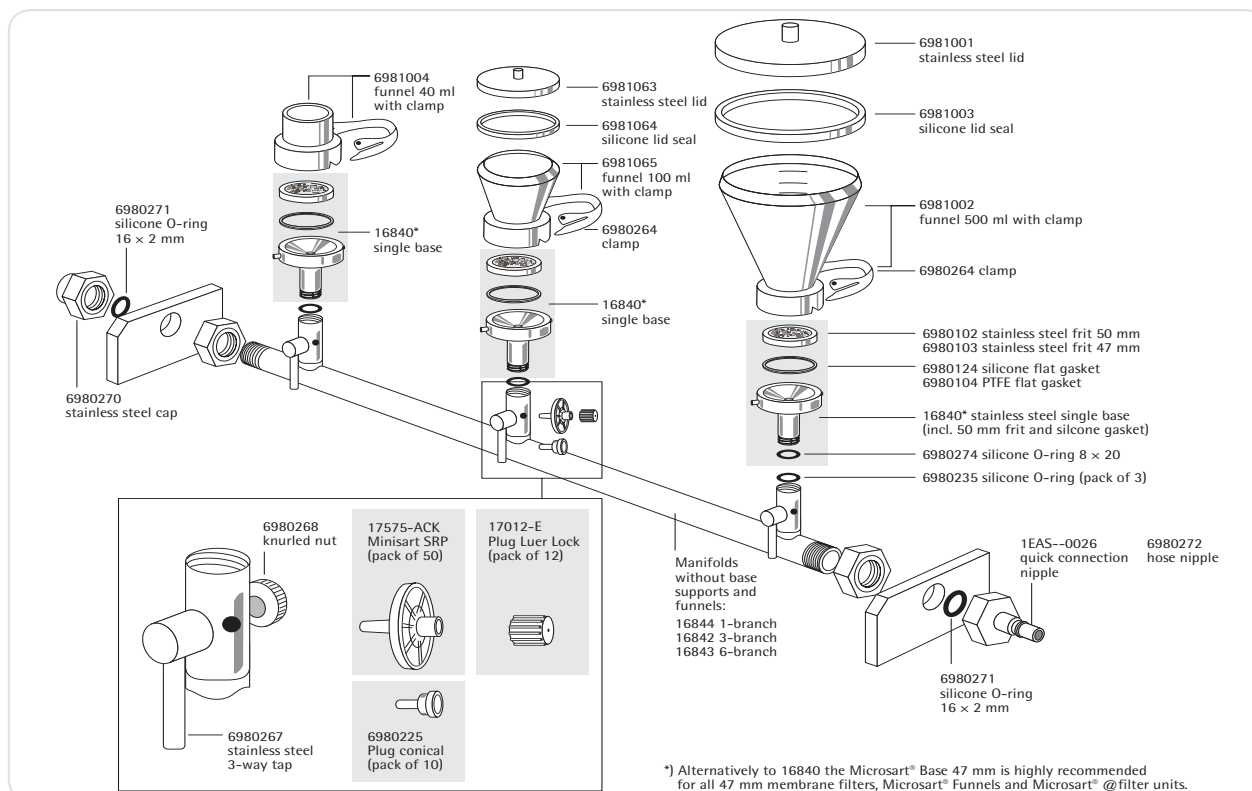
Choose complete filtration systems easy and fast under:
www.sartorius.com/microbio



Replacement Parts for Combisart® Individual Filter Holders



Replacement Parts for Combisart® Manifolds



Accessories and Replacement Parts for the Combisart® System

| Description | Qty. | 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 single base 16840 male thread (also 1ZU---0002) | 3 | 6980274 |
| Silicone O-ring for manifold female threads | 3 | 6980235 |
| Silicone flat gasket underneath the frit (16840) | 1 | 6980124 |
| PTFE flat gasket underneath the frit (16840) | 1 | 6980104 |
| Stainless steel frit, 50 mm diameter (16840) | 1 | 6980102 |
| Stainless steel frit, 47 mm diameter (16840) | 1 | 6980103 |
| Quick Connection Nipple, stainless steel | 1 | 1EAS--0026 |
| Hose nipple, stainless steel, DN 10 | 1 | 6980272 |
| Stainless steel frit for Microsart® Base 47 mm (1ZU---0002) | 1 | 1ZU---0001 |

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® single base) or onto 16841 (individual base) | 16424 |
| 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 |

■ Microsart® Combi.jet

2-Branch Stainless Steel Manifold for Microbiological Analysis



The Microsart® Combi.jet is a 2-branch manifold, made of high-grade stainless steel. The manifold has been specifically designed for the use together with the Microsart® e.jet Transfer Pump. The system is able to create sufficient vacuum for vacuum filtration concomitantly transferring the filtered liquid directly to waste. Microsart® Combi.jet and Microsart® e.jet can be easily connected and disassembled by the innovative Quick Connection technology.

Compact Design

The complete traditional equipment, such as connectors, tubes, suction flask, protection filter, Woulff's bottle and a vacuum pump, requires a lot of laboratory space and is time consuming to operate and maintain. Microsart® Combi.jet reduces operating complexity due to its small and compact design. The Transfer Pump Microsart® e.jet fits visually and ergonomically into this design.

Quick Connection

Building-up the vacuum filtration system is easy and fast thanks to the innovative Quick Connection Coupling and Nipples at the Microsart® Combi.jet manifold and Microsart® e.jet Transfer Pump. Simply push-to-connect for assembling and pull-to-disassembling the whole system within seconds.

Sterile Venting

A special feature of the Microsart® Combi.jet manifold are the stainless steel three-way valves (taps). They allow 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.

Maximum Flexibility

The Microsart® Combi.jet enables you to select the optimal hardware and consumables for your needs in microbiological analysis in quality assurance. The heart of the whole system is the Microsart® Combi.jet, the stainless steel 2-branch manifold, designed to accommodate all types of filter holders and funnels such as:

- Ready-to-use units Microsart® @filter 100 and 250
- Ready-to-use units Microsart® Funnel 100 and 250
- Ready-to-use units Biosart® 100 Monitors
- Ready-to-use units Biosart® 250 Funnels
- Flammable units such as stainless steel funnels
- Autoclavable glass filter holders
- Autoclavable polycarbonate filter holder

Reliability: Ideal for Microbiology Applications

- Sterile venting after filtration
- Easy to clean and sanitize
- Smooth and reliable filtration

Economically Efficient

- Saving time due to Quick Connection technology
- Saving work space (saves 70%)
- No need of suction flasks and water traps

□ Specifications

Microsart® Combi.jet

| | |
|------------------------------|---|
| Stainless steel quality | High-grade stainless steel: B.S. 304S31 AISI 304 |
| Dimensions in mm (L H D) | 246 98 130 |
| Max. operating pressure | Vacuum only |
| Sterilization | By autoclaving (max. 134°C) |
| Parts and materials | Manifold: stainless steel, silicone O-ring |
| Quick Connection Coupling | PVDF, closure: stainless steel, sealing: FKM FPM |
| Inlet (manifold) | Female thread, TR 20×2 |
| Outlet | Quick Connection Coupling (female), inner diameter NW 7, non-shut-off |

Microsart® Base 47 mm

| | |
|---|----------------------------------|
| Materials | stainless steel, silicone O-ring |
| Suitable membrane filter diameter | 47 mm |
| Filtration area (e. g. for the use with Microsart® Funnels) | 12.5 cm ² |

□ Ordering Information

Microsart® Combi.jet 2-Branch Manifold, Made of High-Grade Stainless Steel, Without Frits and Funnels, to Accommodate Various Funnel Types

| Description | Order No. |
|--|------------|
| Microsart® Combi.jet 2-branch manifold, without frits | 16848-CJ |
| Microsart® Base 47 mm, with frit, stainless steel base for Combisart® and Microsart® Combi.jet Optimized for the use with 47 mm membranes, Click-Fit closure for Microsart® Funnel, Microsart® @filter and other funnel types sealed by bayonet closure | 1ZU---0002 |

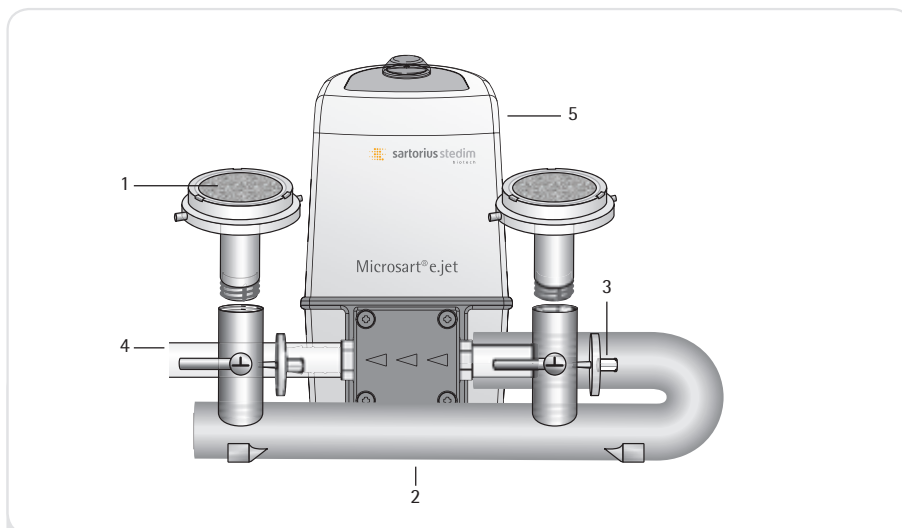
Accessories and Replacement Parts

| Description | Qty. | 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 Microsart® Base 47 mm male thread | 3 | 6980274 |
| Silicone O-ring for manifold female threads | 3 | 6980235 |
| Combisart® single base, stainless steel, optimal for the use with 50 mm membrane filters, funnel closure by bayonet or adapter | 1 | 16840 |
| Microsart® Combi.jet Coupling, Quick Connection, PVDF | 1 | 1EAS--0022 |

Funnels and filter holders to connect onto the Microsart® Combi.jet manifold are equivalent to those for the use with the Combisart® system (page 41).

How to Set-up a Vacuum Filtration System

Microsart® Combi.jet 2-Branch Stainless Steel Manifold plus Microsart® e.jet



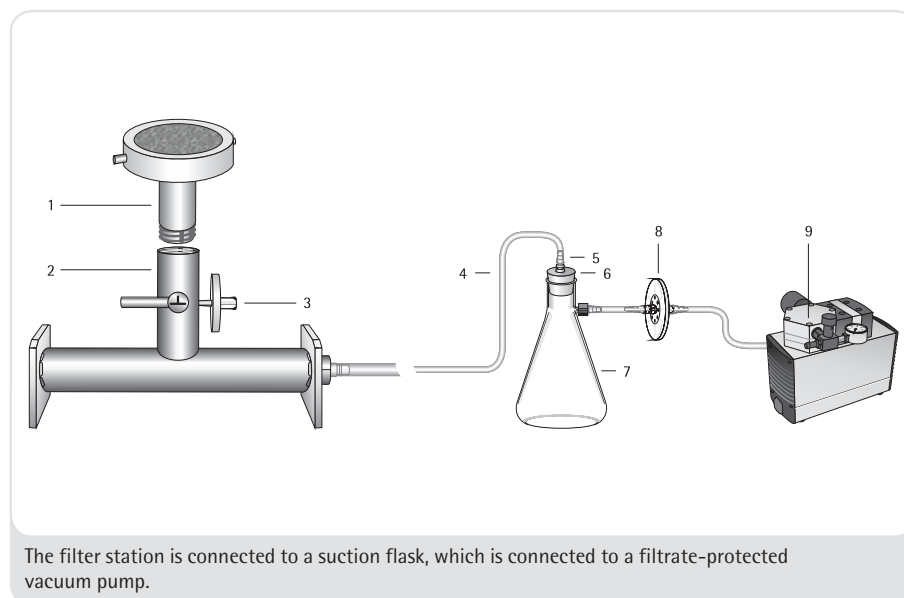
The filter stations are directly connected to the Transfer Pump for simultaneous transfer of the filtrate to waste. Easy assembling thanks to Quick Connection technology.

Ordering Information

| Pos. | Description | Qty. | Order No. | Detailed Information on Page |
|---|---|------|------------------|------------------------------|
| Microsart® Combi.jet stainless steel equipment: | | | | 47 |
| 1 | Microsart® Base 47 mm | 2 | 1ZU---0002 | |
| 2 | Microsart® Combi.jet 2-branch manifold | 1 | 16848-CJ | |
| Sterile venting of the filter station: | | | | 45 |
| 3 | Minisart® SRP25, 0.2 µm | 1 | 17575-----ACK | |
| 4 | Silicone tubing, pressure-sided, 1 m | 2* | 1ZAS--0007 | 59 |
| Vacuum Pump: | | | | 58 |
| 5 | Microsart® e.jet Transfer Pump, 230 V, 50 Hz | 1 | 166MP-4 | |
| Additional accessories: | | | | |
| | Microsart® @filter 100, sterile filter units, packaged on trays | 1 | 16D01--10-H6--TG | 35 |
| | Stainless steel tweezers | 1 | 16625 | 63 |
| | Colony Counter | 1 | 17649 | 62 |
| | Incubator | 1 | 18119 | 62 |
| | Container for anaerobic incubation | 1 | 16671 | 63 |

* required length depends on distance between Transfer Pump and drain

Combisart® 1-Branch Stainless Steel Manifold Plus Microsart® mini.vac

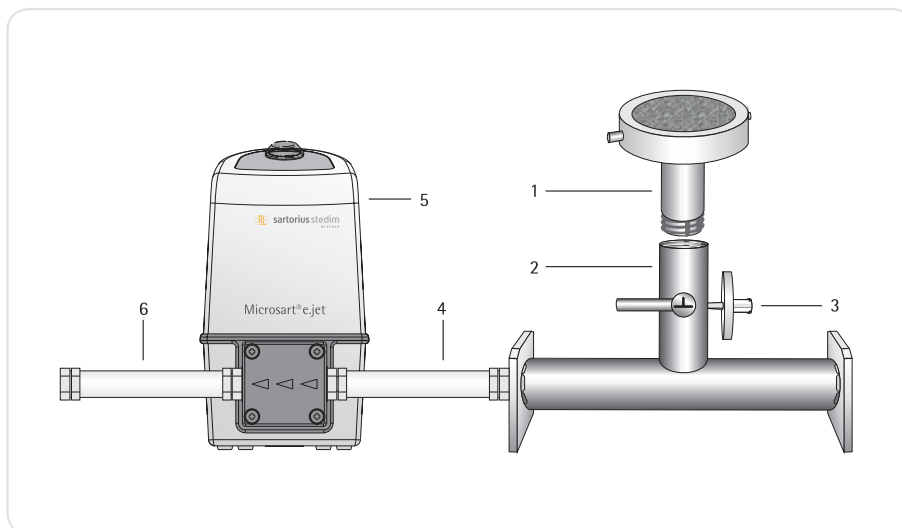


Ordering Information

| Pos. | Description | Qty. | Order No. | Detailed Information on Page |
|--|--------------------------------------|------|---------------|------------------------------|
| Combisart® stainless steel equipment: | | | | 41 |
| 1 | Combisart® single base, 50 mm | 1 | 16840 | |
| 2 | Combisart® 1-branch manifold | 1 | 16844 | |
| Sterile venting of the filter station: | | | | 45 |
| 3 | Minisart® SRP25, 0.2 µm | 1 | 17575-----ACK | |
| 4 | Rubber vacuum hose, 1 m | 3* | 16623 | 55 |
| Suction flask and stopper: | | | | 54 |
| 5 | Tube connector | 1 | 17204 | |
| 6 | Silicone stopper | 1 | 17173 | |
| 7 | Suction flask, 2 liters | 1 | 16672 | |
| Water trap for pump protection: | | | | 55 |
| 8 | Vacusart®, 0.45 µm | 1 | 17804-----M | |
| Vacuum Pump: | | | | 56 |
| 9 | Microsart® mini.vac, 230 V, 50 Hz | 1 | 16694-2-50-06 | |
| Additional accessories: | | | | |
| | Microsart® e.motion Dispenser | 1 | 16712 | 13 |
| | Stainless steel tweezers | 1 | 16625 | 63 |
| | Colony Counter | 1 | 17649 | 62 |
| | Incubator | 1 | 18119 | 62 |
| | Stainless steel prefilter attachment | 1 | 16807 | 63 |
| | Container for anaerobic incubation | 1 | 16671 | 63 |

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

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



Ordering Information

| Pos. | Description | Qty. | Order No. | Detailed Information on Page |
|--|---|------|---------------|------------------------------|
| Combisart® stainless steel equipment: | | | | 41 |
| 1 | Combisart® single base, 50 mm | 1 | 16840 | |
| 2 | Combisart® 1-branch manifold | 1 | 16844 | |
| Sterile venting of the filter station: | | | | 45 |
| 3 | Minisart® SRP25, 0.2 µm | 1 | 17575-----ACK | |
| 4 | Silicone tubing with Quick Connection Coupling, 20 cm, vacuum-sided | 1 | 1ZA---0006 | 59 |
| Vacuum Pump: | | | | 58 |
| 5 | Microsart® e.jet Transfer Pump | 1 | 166MP-4 | |
| 6 | Silicone tubing, pressure-sided 1 m | 2* | 1ZAS--0007 | 59 |
| Additional accessories: | | | | |
| | Microsart® e.motion Dispenser | 1 | 16712 | 13 |
| | Stainless steel tweezers | 1 | 16625 | 63 |
| | Colony Counter | 1 | 17649 | 62 |
| | Incubator | 1 | 18119 | 62 |
| | Stainless steel prefilter attachment | 1 | 16807 | 63 |
| | Container for anaerobic incubation | 1 | 16671 | 63 |

* required length depends on distance between vacuum source and drain

Traditional Multi-Branch Manifolds & 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.



tribution 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.



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 dis-

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).

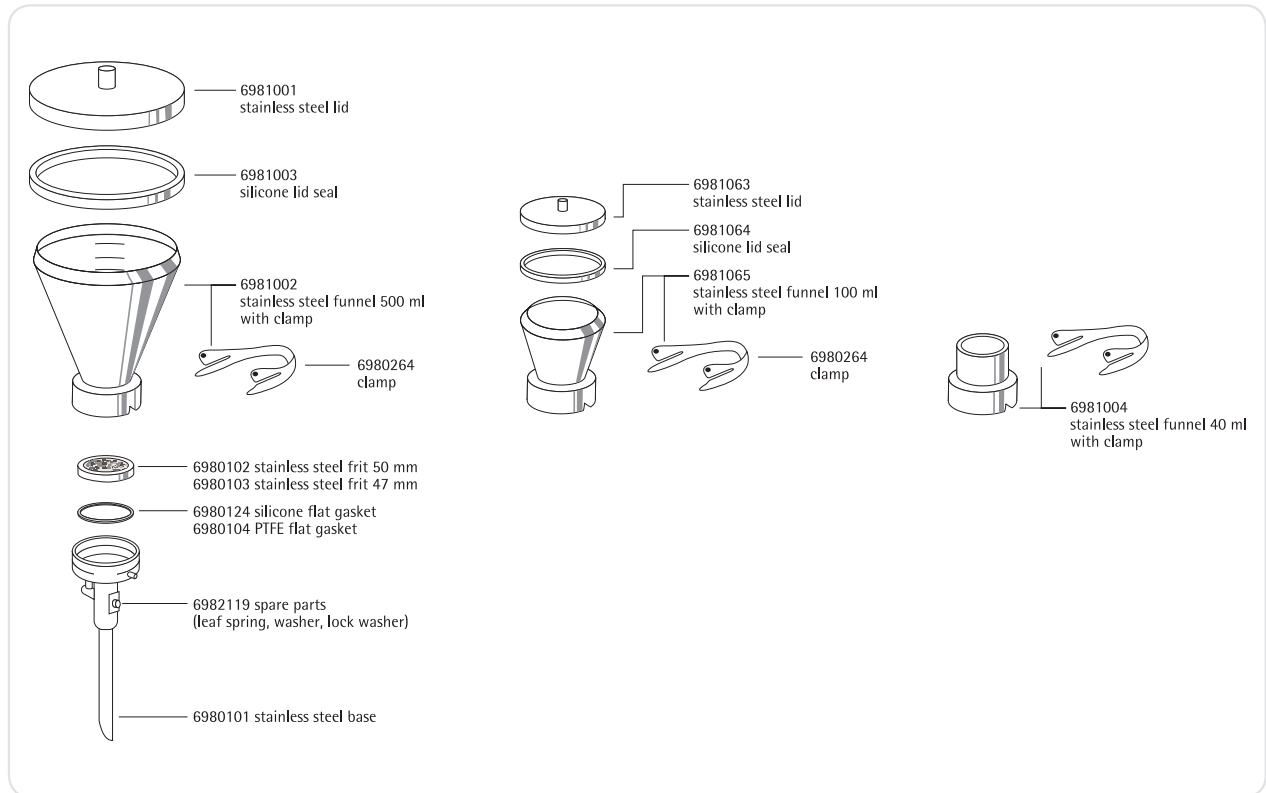


Specifications

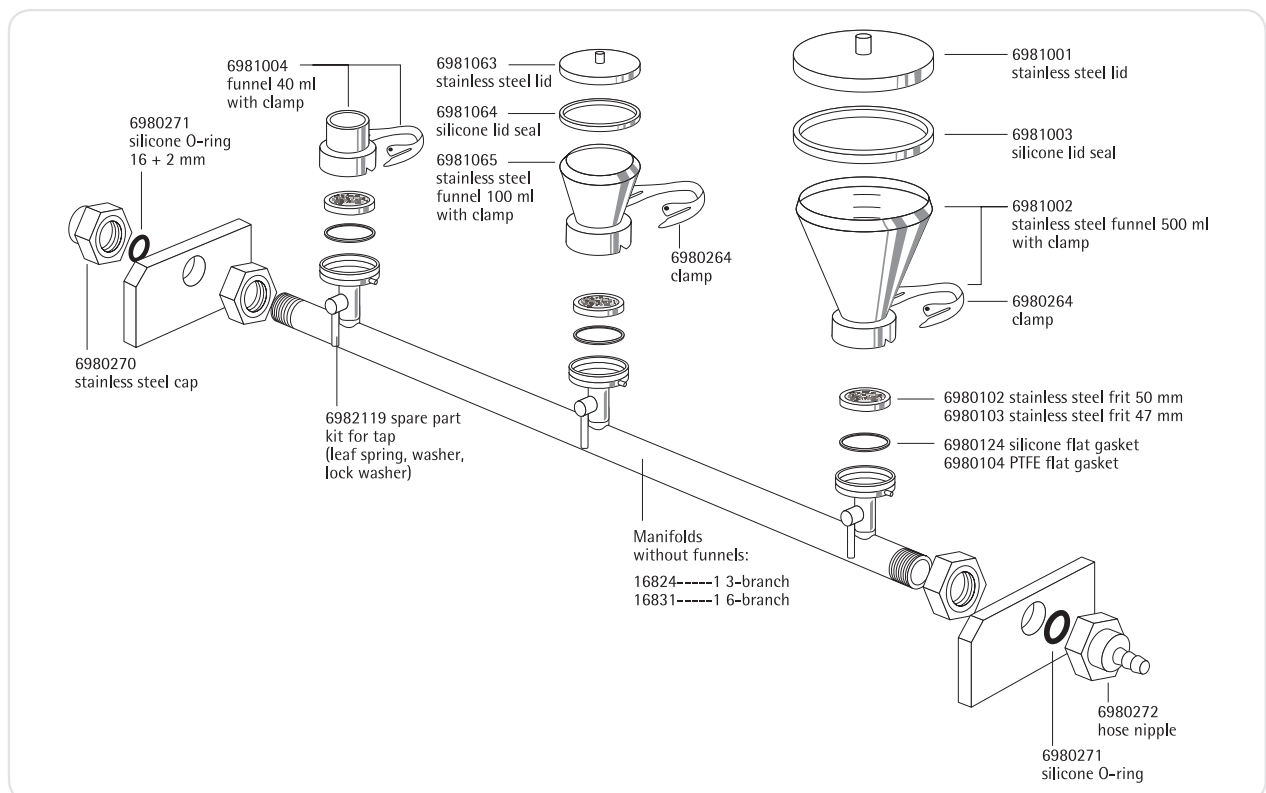
| | |
|---|--|
| Stainless steel quality | High-grade stainless steel: B.S. 304S31 AISI 304 |
| Dimensions in mm (W H D) | 3-branch manifold: 3 × 100 ml: 432 184 120 3 × 500 ml: 442 262 132 6-branch manifold: 6 × 100 ml: 906 268 120 6 × 500 ml: 916 329 132 |
| Max. operating pressure | Vacuum or max. 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



□ Ordering Information



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



Polycarbonate Filter Holder

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

□ Ordering Information

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

| Description | Order No. |
|--|------------|
| Glass 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 |

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 |

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.

□ Ordering Information

| 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.

□ Ordering Information

| 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.

□ Ordering Information

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

■ Electric Vacuum Pumps



■ Microsart® mini.vac | Microsart® maxi.vac

This Sartorius 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

| | 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 (Fluoroelastomer) |
| 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 | All multi-branch manifolds | Single filtration run up to 3-branch manifolds |

□ Ordering Information

| 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 up to 3 filter stations in parallel, 230 V, 50 Hz | 16694-2-50-06 |
| Microsart® mini.vac up to 3 filter stations in parallel, 115 V, 60 Hz | 16694-1-60-06 |

Replacement Parts

| Description | 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 with Quick Connection

The Microsart® e.jet is a new vacuum laboratory pump able to create sufficient vacuum for vacuum filtration and concomitantly transferring the filtered liquid directly to waste. The second generation of Microsart® e.jet is ideal for sample preparation in Microbiology achieving a trans membrane pressure of 600 mbar and a higher flow rate of > 4.0 NI/min (4.0 Norm-liters water displacement by air in one minute). Constant flow rates and a defined maximum vacuum guarantee smooth and reliable filtration.

Reducing Operating Complexity

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. Microsart® e.jet will eliminate the need for side-arm flasks or Woulff's bottles from the laboratory filtration bench.

The Microsart® e.jet pump is an ideal accessory for manifolds up to 3 filter stations. Compared to traditional equip-

ment Microsart® e.jet and a stainless steel manifold require only 30% of the average space meaning in particular less congestion working in Laminar Flow Cabinets.

Traditional vacuum pumps often lose 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.

Quick Connection

Building-up the vacuum filtration system is easy and fast thanks to the innovative Quick Connections. The Microsart® e.jet Transfer Pump is equipped with Quick Connection Nipples assembled to Quick Connection Couplings on hose nipples for DN 10 tubings. Simply push-to-connect for assembling and pull-to-disassembling the whole system within seconds. The Quick Connections are non-shut-off.

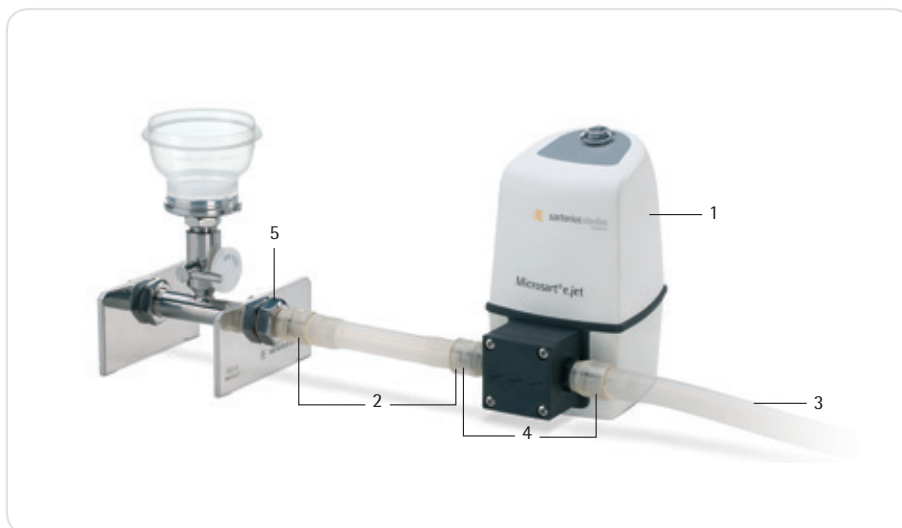
Some of the advantages you will benefit from when using the Microsart® e.jet

- Ideal for microbiology applications
- No need of suction flasks and water traps
- Saving 70% of work space while saving money – that's economic efficiency

□ Specifications

| | |
|--------------------------------------|--|
| Flow rate | > 4.0 NI/min |
| Max. vacuum | 0.4 bar |
| Max. pressure | 1.0 bar |
| Mains | 100–240 V 47–63 Hz |
| Materials (in contact with filtrate) | PTFE, ETFE, Polypropylene, EPDM, POM, PSU |
| Weight | Pump: 1425.3 g Power supply: 242.6 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 |
| Inlet Outlet | Quick Connection on hose nipples for DN 10 tubings |

Microsart® e.jet with Quick Connection



Ordering Information

| Description | Order No. | No. in Picture |
|--|-----------|----------------|
| Microsart® e.jet Transfer Pump with Quick Connection, without tubings, inlet and outlet hose nipples for DN 10 tubings | 166MP-4 | 1 |

Accessories

| Description | Order No. | No. in Picture |
|--|------------|----------------|
| Tubing with Quick Connection Coupling (PSU), silicone, 20 cm, for vacuum-sided connection, inner diameter DN 10, outer diameter DN 20, wall thickness 5 mm (when ordering, please state length required in meters) | 1ZA---0006 | 2 |
| Silicone tubing, 1 m, for pressure-sided connection, inner diameter DN 10, outer diameter DN 14, wall thickness 2 mm | 1ZAS--0007 | 3 |
| Foot switch for Microsart® e.jet Transfer Pump | 1ZE---0053 | |

Replacement Parts

| Description | Order No. | No. in Picture |
|---|------------|----------------|
| Pump head complete for 166MP-3 and 166MP-4 | 1EP---0003 | |
| Power supply complete for 166MP-3 and 166MP-4 | 1EE---0012 | |

Threaded Fittings

| | | |
|---|------------|---|
| Quick Connection set, 2 Nipples (POM) on R3/8" male thread and 2 Couplings (PSU) on DN 10 hose nipple | 1EAS--0027 | 4 |
| Quick Connection Nipple, stainless steel | 1EAS--0026 | 5 |
| DN 10 hose nipple on R3/8" male thread | 1EAF--0020 | |



Traditional Pumps

Description

| 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

Description

| Description | 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 |
| Rubber tubing | 16623 |





■ Water Jet Pump

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

□ Ordering Information

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



■ Hand-Operated Vacuum Pump

Practical vacuum source e.g. for the use outside of a laboratory. Up to 80% vacuum can be obtained. The body is made of PVC. Supplied completely with gauge, vacuum release lever and a 60 cm clear plastic tubing.

□ Ordering Information

| 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 e.g. 3.5 ml steps

is easily done by simply 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 trigger automatically.

□ Ordering Information

| 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, as simple to use as a ball-point pen, and with 4-digit LCD-display. The counter is supplied with an additional marker refill.

Ordering Information

| 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 18 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

| | |
|--------------------------------|--|
| Voltage | 100–240 V |
| Frequency | 50 60 Hz |
| Rated power | 0.045 kW |
| Weight | 7.2 kg (15 lbs) |
| Max. shelf load | 2 kg (4.4 lbs) |
| Dimensions W H D (mm) | Inner 290 180 310 Outer 470 260 415 |
| Temperature range | 17°C to 40°C |
| Temperature stability at 37°C | Less than ±0.2°C |
| Temperature uniformity at 37°C | ±1.2°C |
| Capacity | approx. 18 liters |

Ordering Information

| Description | Order No. |
|-------------|-----------|
| Incubator | 18119 |



Stainless Steel Tweezers

Membrane filters should only be handled with suitable tweezers to avoid contamination since the stainless steel tweezers

can be flamed and are autoclavable. They have blunt-edged tips for a careful, firm hold of the membrane filter.

Ordering Information

| 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 mixed ester) membrane filter with a pore size of 8 μm is used as a

prefilter which retains the coarse suspended particles from the sample, whereas it allows microorganisms to pass through. The microbes are trapped on the surface of the underlying bacteria-retentive membrane filter (e. g. 0.45 μm). After the filtration is completed, 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.

Ordering Information

| 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, flame treatment resistant | 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.

Ordering Information

| Description | Order No. |
|---------------------|-----------|
| Anaerobic container | 16671 |



sartorius stedim

Prog. M1
70
SPEED
00:00
Max 0.01g

Esc

sartorius stedim

■ Sterility Testing

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Sterility Testing is the analysis for sterility of defined pharmaceutical products which must be sterile according to international pharmacopeia. This test directly examines the final product in the given container, whether it might be filled in a syringe, bottle, vial or bag. There is also no exception on the physical form the pharmaceutical products may have. Liquids or powders, ointments or oils, creams and solid forms, suspensions and emulsions, they all have to be tested for microbial contamination.

The potential impact on human or animal health pathogens have, underlines the importance of the "Sterility Test". Almost any kind of microorganism, assumed given the chance, can become pathogenous and do severe physical harm to living organisms. Injection of microorganisms directly into the bloodstream enables the infection and colonization of tissues which are usually considered as being sterile. The principle of the test for sterility is based upon the "membrane filtration method", which initially enables the concentration of microorganism from a variety of sample volumes, by simultaneously washing out growth inhibiting substances. After 14 days of cultivation in defined media the sample has to be analyzed visually for turbidity: No turbidity means no contamination!

Parenterals, ophthalmics and surgical devices have to follow the same stringent microbiological controls. Benefit from Sartorius' long-standing expertise in manufacturing a wide range of dedicated products, especially designed for use in cleanrooms. The comprehensive range of consumables with dedicated adapters, ensure reliable results and "making your lab life easier".

Find more about our Sterility Test solution, with fully complies to international pharmacopeia and our extensive service package:

- More than 20 different sterility test consumables available
- Dedicated cleanroom pumps for use in Isolator or Clean bench
- EXPAND® Training
- EXTEND Instrument Services
- CONFIDENCE® Validation Services

■ Sterisart® NF – Sterility Test Consumables



Sterisart® NF Septum version

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 means the main risk of a secondary contamination and false positive results is eliminated. A peristaltic pump transfers the sample into the filtration units. After rinsing, the filtration units are filled with media and used for incubation of the filters without any contact to the environment.

As different pharmaceutical products and their containers need different systems for a convenient and secure sample transfer different versions adapted to the needs are available. Detailed information can be found in the corresponding data sheets Order no. SLD1002-e, SL-2019-e, SLD2006-e, SLD2005-e, SLD2007-e, S--2019-e, SLD2009-e, SLD2011-e and the overview brochure Order no. SLD1004-e

Sterisart® NF Offers the Following Features and Benefits

Unique Septum version for aseptic sampling and supplement

The sterile, medical grade septum enables and facilitates the aseptic sampling out of the canister during | after 14 days of incubation, which is required for:

- dilution,
- rapid detection

or for supplement of

- additives which inactivate growth inhibiting substances
- microorganism during validation (Bacteriostasis | Fungistasis test, Stasis Test)

Ergonomical and safe handling

- Easy to open packaging
- Large color-coded clamps for optimized use with gloves
- Protective shields to avoid injuries

Reliable results

- Sartochem® membrane for highest retention of microbes, low adsorption and high mechanical stability
- Gas-impermeable packaging for use in isolators
- Product and lot information on units and additionally as barcode on packaging

Flexible use

- Different variants with several user friendly adapters for the most common sample containers
- Septum variants for sampling during incubation

At Sartorius, together with our customers, we steadily improve the features and ease of use of every product we manufacture to make your life in the lab easier. The Sterisart® NF Septum version features a septum with a membrane made of latex for aseptically taking samples out of the Sterisart® NF canister without risking secondary contamination. This may be applicable for different purposes, for example for the validation of pharmaceutical products (stasis test), for the supplement of additives (β-Lactamase), or for the dilution and transfer of materials being tested that render the medium turbid USP <71>.

Services

Validation on request, refer also to page 81

Sterisart® BD Media and Fluid refer to page 74

□ Specifications

| | |
|---|---|
| Pore size of the Sartochem® membrane filter | 0.45 µm, retention of 10 Million <i>Serratia marcescens</i> per cm ² of active filtration area |
| 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 <i>B. diminuta</i> |
| 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 |

■ Sterisart® NF alpha

Disposable units for sterility testing in clean rooms, individually, sterile packaged, ETO-sterilized, needles made of flame-sterilizable stainless steel, 10 units

□ Ordering Information

| Description | Type of Sample | Type of Sample Container | Order No. |
|--|-----------------|--|---------------|
| Sterisart® NF alpha with long dual-needle metal spike, sterile-vented | LVPs | Closed glass bottles with septum | 16466-----ACD |
| Sterisart® NF alpha with long needle and protective plate, inclusive sterile venting needle | LVPs SVPs | Open containers (i.e. glass ampoules, glass bottles), collapsible bags | 16467-----ACD |
| Sterisart® NF alpha with Luer or Luer Lock connector, inclusive long needle and sterile venting needle | Medical devices | Tubing systems and bags with Luer or Luer Lock connectors | 16468-----ACD |





■ Sterisart® NF gamma

Disposable units for sterility testing in isolators, individually sterile, double-packaged, gamma irradiated, needles made of flame-sterilizable stainless steel, 10 units

□ Ordering Information



| Description | Type of Sample | Type of Sample Container | Order No. |
|--|--|---|---------------|
| Sterisart® NF gamma with long dual-needle metal spike, sterile-vented | LVPs | Closed glass bottles with septum | 16466-----GBD |
| Sterisart® NF gamma with long needle and protective plate, inclusive sterile venting needle | LVPs SVPs | Open containers (i.e. glass ampoules, glass bottles), collapsible bags | 16467-----GBD |
| Sterisart® NF gamma with Luer or Luer Lock connection, inclusive long needle and sterile venting needle | Medical devices | Tubing systems and bags with Luer or Luer Lock connectors | 16468-----GBD |
| Sterisart® NF gamma with syringe-adaptor and long dual-needle metal spike, sterile-vented | Pre-filled syringes | Syringes with and without needles | 16469-----GBD |
| Sterisart® NF gamma with two dual-needle metal spikes of different length, one is sterile-vented | Lyophilisates, soluble powders, liquid antibiotics | Closed glass vials with septum | 16475-----GBD |
| Sterisart® NF gamma with short dual-needle metal spike, sterile-vented | SVPs | Closed glass vials with septum | 16476-----GBD |
| Sterisart® NF gamma with long needle (side side opening, with solid pointed tip, non-coring), protective plate, inclusive sterile venting needle | LVPs, SVPs, eye drops | Closed plastic containers vials ampoules, plastic containers of Blow-Fill-Seal fillings | 16477-----GBD |
| Sterisart® NF gamma with female Luer Lock connector | NEW Medical devices | Containers bags with Luer Lock male connectors | 16478-----GBD |



■ Sterisart® NF gamma Septum **NEW**

Disposable units for sterility testing in isolators, Sterisart® NF containers with integrated septum for reliable sterile sampling during incubation. Individually sterilized, double-packaged, gamma irradiated, needles made of flame-sterilizable stainless steel, 10 units

□ Ordering Information

| Description | Type of Sample | Type of Sample Container | Order No. |
|--|--|--|---------------|
| Sterisart® NF gamma Septum with long dual-needle metal spike, sterile-vented | LVPs | Closed glass bottles with septum | 16466-----GSD |
| Sterisart® NF gamma Septum with long needle and protective plate, inclusive sterile venting needle | LVPs SVPs | Open containers (i.e. glass ampoules, glass bottles), collapsible bags | 16467-----GSD |
| Sterisart® NF gamma Septum with syringe-adapter and long dual-needle metal spike, sterile-vented | Pre-filled syringes | Syringes with and without needles | 16469-----GSD |
| Sterisart® NF gamma Septum with two dual-needle spikes of different length, one is sterile-vented | Lyophilisates, Soluble powders, Liquid antibiotics | Closed glass vials with septum | 16475-----GSD |
| Sterisart® NF gamma Septum with short dual-needle, sterile vented | SVPs | Closed glass vials with septum | 16476-----GSD |



Accessories

Description

Sterisart® NF gamma tubing system with two dual-needle metal spikes of different length, needles made of flammable stainless steel

Application

Dissolving and diluting of hardly soluble powders in closed containers

Order No.

16470-----GBD



Needle with venting filter, 4 cm, stainless steel, individually sterile packaged, gamma-irradiated, pack size 50

Sterile venting of containers with rinsing solution and nutrient media, additional sterile venting needles, equal to the included needles of the Sterisart® NF units, i.e. type 16467, 16468 and 16477

16596-----HNK

Further units on request.

■ Sterisart® Universal Pumps



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. Manufacturer of such products are required to supply proof of sterility of the final product batch.

The Sterisart® Universal Pump is available in two versions: the basic version 16419 and the 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

- Enhanced safety due to the closed system without ventilation
- Robust stainless steel housing
- Compact and ergonomic construction
- Modular design
- Pump available with special software (menu-driven prompts for operator guidance; all process sequences can be logged; barcode recognition)

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

Services

IQ | OQ and maintenance service on request, see also page 81



Photo: SKAN AG, Switzerland



Specifications

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

Ordering Information

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

Accessories

| Description | Order No. |
|--|------------|
| Footswitch | 1ZE---0033 |
| Adapter for Sterisart® NF units, fitting into container for draining of Millipore Equinox pump | 1ZG---0014 |
| Transport trolley | 1ZE---0039 |
| Communication kit | 1ZE---0040 |
| Installation kit for isolators | 1ZE---0050 |
| Container for draining | 1ZG---0010 |
| Drain Tubing | 1ZA---0002 |

Further accessories are available on request.

■ Sterisart® BD Media and Fluids



Sterisart® BD Media and Fluids are sterilized by autoclaving in their final primary bottles. They are used on clean benches or in clean rooms. Special packaging types are ideal for transferring media from non-sterile areas into sterile areas such as isolators.

- Transparent labels allow a clear view of media and cultures.
- Labels resist alcohol and chlorine treatment.
- Color-coded caps and labeling for the nutrient media allow easy product identification.
- Specially developed clear FTM for much easier growth detection.
- Growth performance test conforms to EP and USP requirements.
- Extensive Certificates of Analysis showing microbial recovery of all microorganisms listed in EP and USP.

Multi-packaged, ETO-sterile

The autoclaved filled bottles are packaged into a polypropylene box which is then sealed into a Stericlin® bag and sterilized by ethylene oxide (ETO). This treatment provides a sterile outer surface of the bottles and the packaging. The multiple-packaging allows the transfer of the bottles into clean rooms from a non-sterile into a sterile area.

- Sterile outer surface of the bottles eliminating the need for spraying down bottles before transferring them into clean rooms or isolators.
- Polypropylene boxes reduce shedding of particles to a minimum.
- Compact packaging saves working space.
- Optimal for small clean room areas such as isolators due to clever waste management

Individually Double-packaged, Sterile

The filled bottles are packaged into two Stericlin® bags prior to autoclaving. This unique manufacturing process results in a bottle exterior that is free from microbial contaminants.

- Double-packaging ensures that the area under the cap remains sterile, therefore reducing the risk of false positive results.
- Sterisart® BD Media and Fluids are validated at a sterility assurance level (SAL) of 10^{-6} .
- Sterisart® BD Media and Fluids comply with the requirements set forth in the International Pharmacopoeia such as EP and USP.
- Optimal for all clean room areas including isolators due to easy and reliable transfer into the sterile area



Nutrient Media Types

FTM – Fluid Thioglycollate Medium according to USP | EP:

Liquid nutrient medium for the sterility testing of biologics and for the enrichment and cultivation of anaerobes, aerobes, and microaerophiles acc. to USP and EP. In order to avoid secondary contamination, the Sterisart® BD Media Type FMT is not under vacuum, but the headspace of the FTM is gassed with a stream of nitrogen to maintain anaerobiosis.

Sterisart® BD Media Type FTM contains a special quality of agar, resulting in a high clarity of the prepared medium.

Color code: red

TSB – Tryptic Soy Broth according to USP | EP:

A general purpose liquid nutrient medium used in sterility testing for the detection, isolation, and cultivation of fastidious and non fastidious microorganisms acc. to USP and EP.

Sterisart® BD Media Type TSB is a nutritious medium that will support the growth of a wide variety of microorganisms, including common aerobic and facultatively anaerobic bacteria and fungi.

Color code: blue

Rinsing and Diluting Fluids

Fluid A and Fluid D according to USP

Three different steps are required by the compendia depending on the condition of the sample:

- Rinsing: Sterile devices or materials are rinsed in order to release adhered microorganisms. After filtration of the sample, the Pharmacopoeia also require rinsing steps to be performed on the entire Sterisart® NF unit.
- Diluting: Small volumes or viscous liquids are diluted for better filterability
- Dissolving: Solid samples or ointments are dissolved for better filterability

Fluid A (Peptone Water)

Fluid A is used for diluting, dissolving and rinsing of all types of samples.

Fluid D

(Fluid A with 0.1% Polysorbate 80)

Fluid D is peptone water with 0.1% polysorbate 80 (TWEEN® 80). It is used for those samples types which contain lecithin or oil. Another application is to rinse articles and devices with bacteriostatic or fungistatic activity. Polysorbate 80 may act as an inactivator of microbicides present in or on a testing sample.

The use of Sterisart® BD Fluid A and Fluid D does not affect the viability of microorganisms.

Both Sterisart® BD Fluid Types, Fluid A and Fluid D, are according to the specifications of the United States Pharmacopoeia (USP).

Sterisart® BD Media & Fluids on request

EXPAND®

Training Courses and Seminars



Sterility Testing

Who should attend

Staff working in the field of microbiological quality control who perform or are responsible for the performance of sterility testing.

“Because sterility testing is a very exacting procedure, where asepsis of the procedure must be ensured for a correct interpretation of results, it is important that personnel be properly trained and qualified” USP <71>.

This workshop is designed to give participants theoretical knowledge and practical experience in the handling of sterility testing in clean rooms and isolators.

Theoretical Aspects Include

- Regulation and guidance
- Sterility test methods | test limitations
- Validation
- Interpretation of sterility test results
- Microbiological monitoring

Practical Exercises

- Sterility testing of different sterile products (LVPs | SVPs | ampoules | syringes | medical devices)
- Performing sterility test in isolators

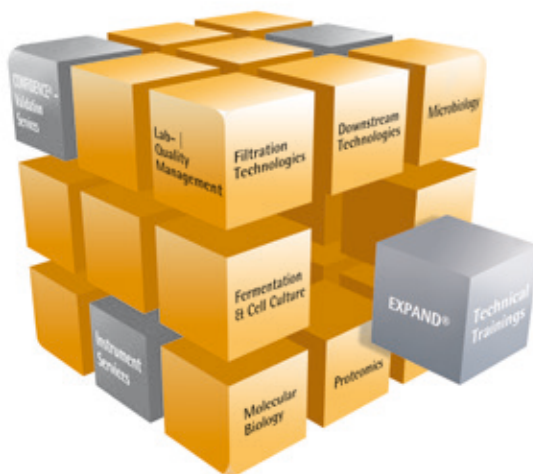
Course date | venue
on demand

Course Duration
1.5 days

Start first day: 1:00 pm
End last day: 4:00 pm

Trainer
Dr. Dagmar Simons

Course Fee
on demand



■ Installation and Commissioning

Sterisart® Pump



The reliability and the service life of your equipment significantly depend on its installation and configuration according to the specifications.

Installation and commissioning by our service professionals will ensure that your Sterisart® pump successfully operates right from the start.

Sartorius Service installs and configures according to regulatory requirements and quality standards.

Prerequisites Required by the Customer

- System is standing at the installation location
- Unobstructed access to the system
- Power is available at the installation location
- When ordering, a responsible person has to be appointed

□ Specifications

- Check of scope of delivery
- Check of device for transport damage
- Manufacturer's ID label check
- Installation of system components and utilities connection
- Positioning of the system at the installation location (not installation in isolator*)
- Initial start-up
- Brief instructions to operating personnel (not application training)
- General maintenance discussion

* The installation in an isolator is charged on time basis.

□ Ordering Information

| Description | Order No. |
|--|-----------|
| Installation and Commissioning Sterisart® Pump | S8740INST |

■ Preventive Maintenance

Sterisart® Pump



The objective of preventive maintenance is a continuous, precise operation of your equipment, to secure your investments for the long term and to guarantee correct and proper function.

Preventive maintenance will be performed in accordance with Sartorius' fixed standards and in between the contractually stipulated time intervals between the customer and Sartorius.

Prerequisites Required by the Customer

- System is standing at the maintenance location
- Unobstructed access to the system
- When ordering, a responsible person has to be appointed
- Access by automobile is possible | parking lot is available

Repairs, spare parts as well as shipping costs, travel costs and expenses are not covered in scope of services and will be invoiced separately.

□ Specifications

- Inspection visit at fixed intervals or as needed
- Visual inspection
- Maintenance check according to maintenance checklist
- Check of flow rate capacity and uniform performance
- Start-up test



Validation of Sterility Testing with the Sterisart® System



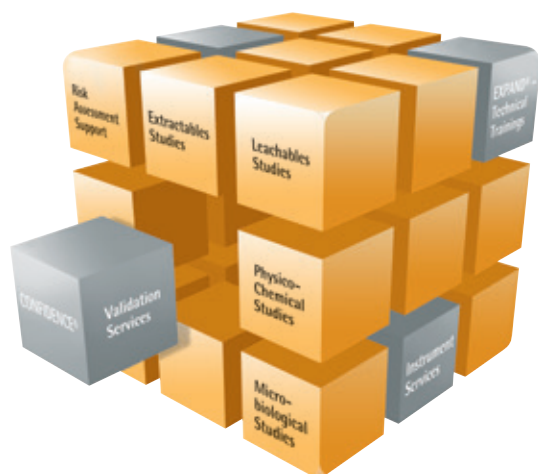
Introduction

Sterility testing is a critical step in pharmaceutical product release. It is a very exacting procedure where aseptic conditions, well-trained personnel and validated methods must be adhered to for the consistent interpretation of results.

Validation of the sterility test is essential for a quality program and to meet regulatory requirements. Every precaution must be taken to ensure that the environment, procedures, test materials and personnel do not inadvertently contaminate routine testing while still making the detection of product contamination possible.

Customized Study

- An experienced technical team will select representative products for testing based on a scientifically sound bracketing approach with supporting rationale.
- Products are classified in groups according to their chemical and anti-microbial properties; the worst-case products are selected for testing.
- Validation is conducted according to routine procedures using the same testing parameters, volume of filtered product, fluid rinse cycles and testing environment.
- Tests are conducted by the laboratory according to USP and | or EP requirements.

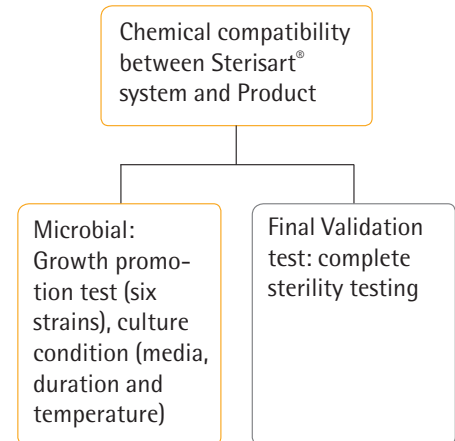


Conducted by Confidence®

1. Chemical compatibility between the product sample and the Sterisart® system is demonstrated on all plastic parts (needles, connections, tubing and containers). In addition the filter integrity of the Sartochem® membrane is tested.
2. Microbial growth should not be inhibited by the sample under routine testing conditions in controlled environment.
 - One series of positive control tests is performed. Six strains (Staphylococcus aureus, Bacillus atrophaeus, Pseudomonas aeruginosa, Clostridium sporogenes, Candida albicans and Aspergillus brasiliensis) in neutral solution are individually inoculated directly into the filtration unit (100 CFU per filtration unit).
 - One series with strains is inoculated (100 CFU per filtration unit) in the solution to be tested and filtered through the filtration unit in routine conditions
 - The sterility and fertility of the Thioglycollate and Soybean Casein Digest media are checked.
 - Equivalent microbial growth must be observed in both testing series.
3. Sterility test
Sterility testing is performed according to routine SOP in controlled environment.

Study Design

All Sterisart® disposable systems are designed with a unique and reliable membrane that has high retention of microorganisms, low adsorption and high chemical | mechanical stability.



- Conducted by Confidence® Validation Services
- Conducted by Customer

Conducted by Customer

Following the routine procedure, one complete sterility test validation run should be performed by the customer's operators in their routine environment.

Regulatory Compliance

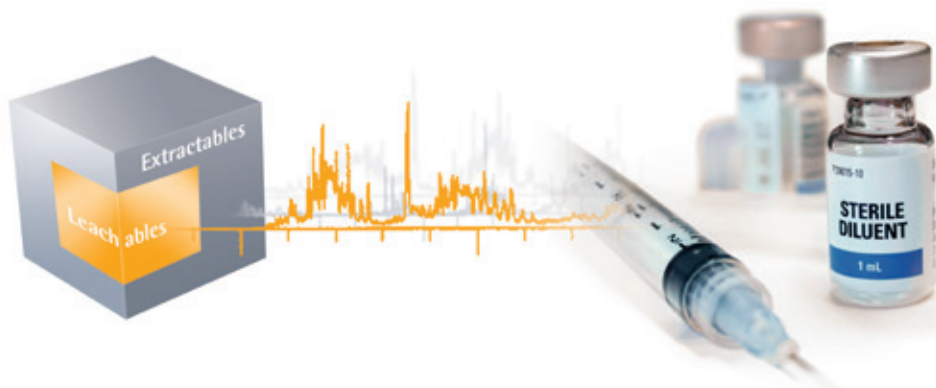
USP <71> Sterility Tests
EP 2.6.1 Biological Tests – Sterility
ISO17025 certified and FDA registered Laboratory – Complies with general requirements for the competence of testing and calibration laboratories, cGMP recommendations are applied for test procedures

Documentation Provided

Detailed protocols and reports including rationale, test results and method transfer assessment are provided based on the health authorities' requirements. Full traceability is given according to cGMP recommendations and internal quality systems.

Assay Duration

Typically five weeks after samples receipt and protocol approval the study report for non-inhibitory products can be provided.





Microsart AMP
Positive Control

Microsart AMP
Positive Control

Microsart AMP Mycoplasma
Final Control

Microsart AMP Mycoplasma
Rehydration

Microsart AMP Mycoplasma
CR Grade Water

Microsart AMP Mycoplasma
CR Grade Water

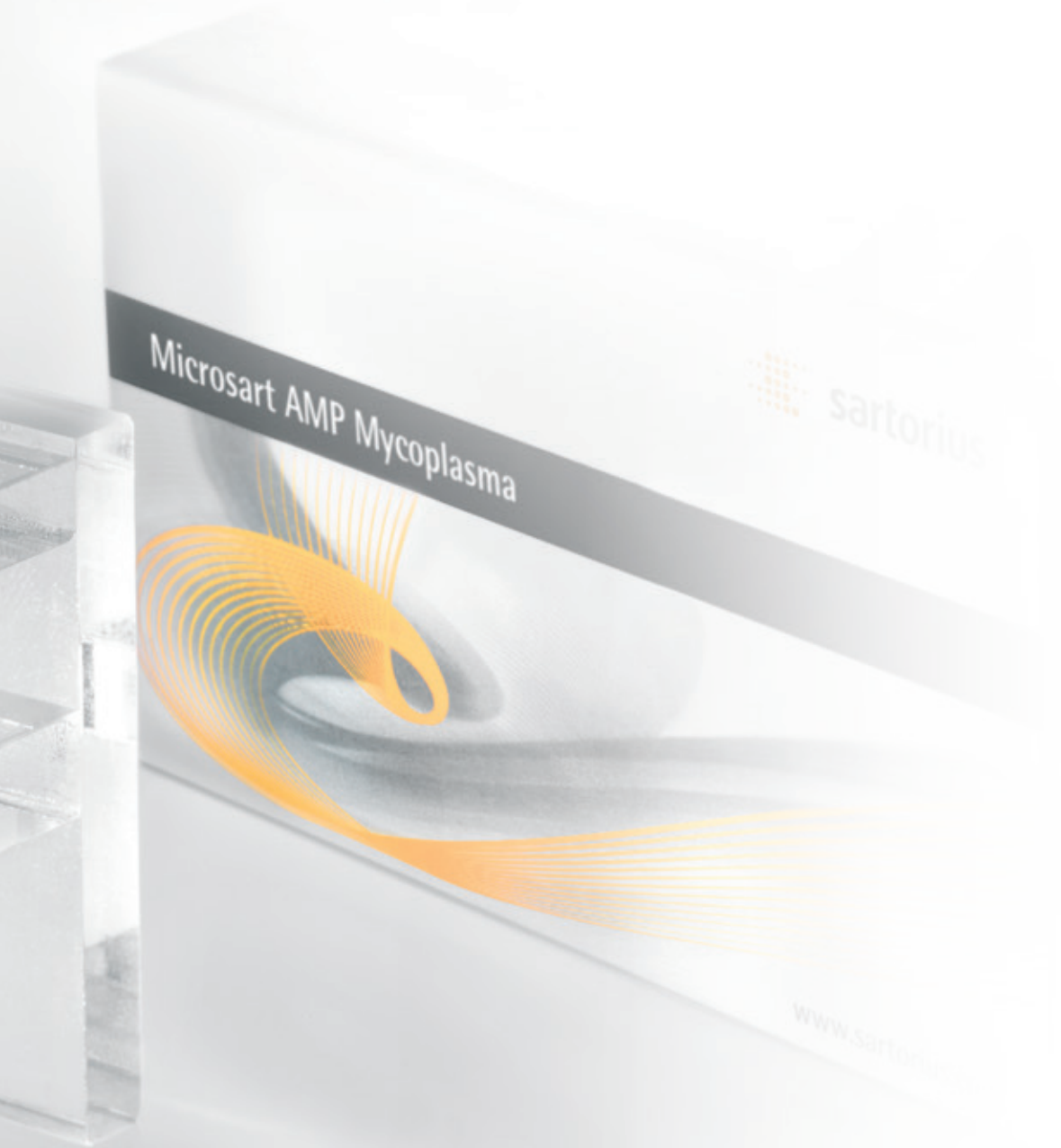
■ Mycoplasma Contamination Control

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88 Microsart® ATMP Mycoplasma

90 Microsart® RESEARCH Mycoplasma





Mycoplasma are among the world's smallest bacteria capable of independent reproduction. They belong to the class of Mollicutes and have a very slow and parasitic growth. They cause many infections in animals and plants. *Mycoplasma* are very difficult to control as they lack the bacterial cell wall, which is the main point of attack for many antibiotics. For this reason, a complete retention with conventional cell structure sterile filters (0.2 μm pore size) is not possible. The risk is that the *Mycoplasma* with a cell size between 0.5 and 0.8 μm could pass through the pores due to their great flexibility and capacity for deformation. Without causing any visible changes in the culture a *Mycoplasma* contamination can reach high numbers, with no effect on viability and thus may go undetected. This means, the earlier you detect *Mycoplasma* contamination, the higher are your long-term savings. Early detection means more time to react, saving you valuable time and considerable expense.

The detection of *Mycoplasma* with conventional methods is labour intensive and requires a cultivation time of at least 28 days before a contamination with these slow-growing bacteria can be ruled out with certainty. Real-time PCR based kits offer a fast and easy-to-use solution for early detection at all stages of your process, whether you are screening in the lab or testing in your production line.

Sartorius offers the Microsart[®] AMP Mycoplasma, Microsart[®] ATMP Mycoplasma and Microsart[®] RESEARCH Mycoplasma detection kits for your different needs and levels of security.

■ Microsart® AMP Mycoplasma

Rapid Real-time PCR *Mycoplasma* Detection Kit



Real-time PCR kit for the specific and sensitive detection of *Mycoplasma* DNA



Rapid methods for the detection of *Mycoplasma* contamination are essential for improving monitoring of the production process of biologicals. The first member of the product line qPCR kits for *Mycoplasma* detection is the Microsart® AMP Mycoplasma. The Microsart® AMP can be easily implemented into your process because no specific hardware is needed. The test procedure takes only 3 hours and is successfully validated for sensitivity, specificity and robustness according to EP 2.6.7. Carefully selected primer/probe combinations are highly specific for a region within the 16S rRNA gene for more than 70 *Mycoplasma* species.

Due to the prior enrichment step using the Sartorius Vivaspin 6 and/or Vivaspin 20, you are very flexible in the testing volume for the DNA extraction. With this concentration step you have the option to analyze a testing volume from 200 µl up to 18 ml which ensures your highest sensitivity. The kit contains all essential components in a function tested ready-to-use master mix including the polymerase.

The use of TaqMan® probes adds specificity to the PCR detection system. The analysis is performed during the cycling process – no melting curve analysis is needed.

A detection limit of less than 10 CFU/ml for all *Mycoplasma* species mentioned in the European Pharmacopoeia fulfills the requirements for the needed sensitivity.

Features & Benefits

Flexible sample volume from 200 µl to 18 ml

The level of security can be adapted to specific needs

Microsart® AMP Mycoplasma is based on Real-time PCR technology

Easy-to-use and Fast: Results within hours not days!

Microsart® AMP Mycoplasma is validated according to EP guidelines

Easy implementation for regulated in-process and lot release testing.

Applications

The Microsart® AMP Mycoplasma kit is specifically designed for microbiological QC labs in the bio-pharmaceutical industry or contract labs performing *Mycoplasma* contamination in-process controls and/or lot release testing according to EP 2.6.7.

It is used for direct detection of *Mollicutes* (*Mycoplasma*, *Acholeplasma*, *Spiroplasma*) in cell cultures, cell culture media components and derived biologicals.

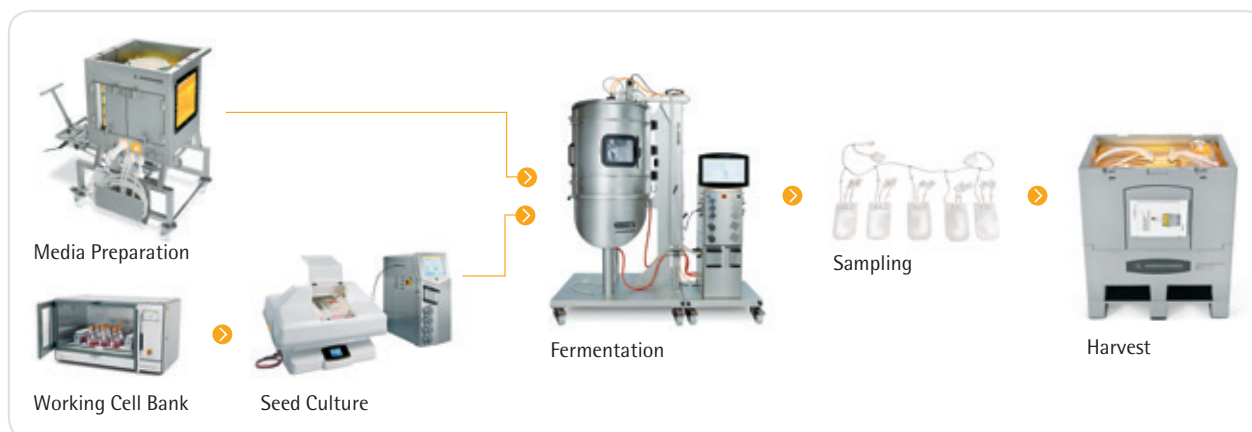
Sample types:

- Master cell banks
- Working cell banks
- Virus seed lots
- Virus harvests
- Final lots of biologicals produced by cells

Notice to purchaser: Limited License

Purchase of this product includes an immunity from suit under patents specified in the product insert to use only the amount purchased solely in industrial microbiology QA/QC field and also for the purchaser's own internal research. No other patent rights are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained by contacting the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

Typical Sampling Steps for Mycoplasma Testing



Specifications

Each kit contains reagents for 25 or 100 reactions. The expiry date of the unopened package is specified on the package label. The kit components are to be stored until use at +2 to +8°C and must be stored after opening and rehydration below –18°C. The lot specific Certificate of Analysis can be downloaded from the manufacturer's website (www.minerva-biolabs.com).

| Kit Component | 25 Reactions | 100 Reactions |
|--------------------|-----------------|-----------------|
| Order No. | SMB95-1001 | SMB95-1002 |
| Mycoplasma Mix | 1 × lyophilized | 4 × lyophilized |
| Rehydration Buffer | 1 × 1.3 ml | 4 × 1.3 ml |
| Positive Control | 1 × lyophilized | 4 × lyophilized |
| Internal Control | 1 × lyophilized | 4 × lyophilized |
| PCR grade Water | 1 × 1.4 ml | 4 × 1.4 ml |

Ordering Information

Mycoplasma Kits

| Description | Quantity | Order No. |
|---------------------------|-----------------|------------------|
| Microsart® AMP Mycoplasma | 25 tests | SMB95-1001 |
| Microsart® AMP Mycoplasma | 100 tests | SMB95-1002 |

Accessories

| | | |
|-------------------------------|----------------|------------|
| Microsart® AMP Extraction | 50 extractions | SMB95-2003 |
| Vivaspin 6, 100,000 MWCO | 25 units | VS0641 |
| Vivaspin 20, 100,000 MWCO | 12 units | VS2041 |
| Microsart® AMP Coating Buffer | 20 × 2 ml | SMB95-2002 |

■ Microsart® ATMP Mycoplasma

Rapid Real-time PCR *Mycoplasma* Detection Kit for testing ATMPs



The Microsart® ATMP Mycoplasma detection kit is the second member of the new rapid qPCR product line for an easy and fast detection of *Mycoplasma*. With the use of the Microsart® ATMP Mycoplasma you will reduce your testing time from weeks to 3 hours. The Microsart® ATMP Mycoplasma has been effectively validated according to EP 2.6.7 in combination with EP 2.6.21 with respect to detection limit for all listed *Mycoplasma* species, specificity and robustness for autologous cell transplants (e.g. chondrocytes).

The use of TaqMan® probes adds specificity to the PCR detection system. The analysis is performed during the cycling process – no melting curve analysis is needed.

Feature & Benefits

Microsart® ATMP Mycoplasma is based on Real-time PCR technology
Easy-to-use and Fast: Results within a day!

Microsart® ATMP Mycoplasma is validated according to EP guidelines for autologous cell transplants
Easy implementation for regulated in-process and lot release testing

No specific hardware requirements
Easy implementation and no additional costs for the hardware package

Applications

The Microsart® ATMP Mycoplasma real-time PCR kit is especially designed for all hospitals, institutions and companies which are involved in testing *Mycoplasma* contamination according to EP 2.6.7 in cell-based therapeutics like autologous chondrocyte transplants (ATMPs – advanced therapy medicinal products).

Notice to purchaser: Limited License

Purchase of this product includes an immunity from suit under patents specified in the product insert to use only the amount purchased solely in industrial microbiology QA/QC field and also for the purchaser's own internal research. No other patent rights are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained by contacting the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

□ Specifications

Each Kit contains all required reagents for 25 or 100 reactions including polymerase as part of the Mycoplasma Mix. The expiry date of the unopened package is specified on the package label. The kit components are to be stored until use at +2 to +8°C and must be stored after opening and rehydration below -18°C. The lot specific Certificate of Analysis can be downloaded from the manufacturer's website (www.minerva-biolabs.com).

| Kit Component | 25 Reactions | 100 Reactions |
|----------------------|---------------------|----------------------|
| Order No. | SMB95-1003 | SMB95-1004 |
| Mycoplasma Mix | 1 × lyophilized | 4 × lyophilized |
| Rehydration Buffer | 1 × 1.0 ml | 2 × 1.0 ml |
| Positive Control | 1 × lyophilized | 1 × lyophilized |
| Internal Control | 1 × lyophilized | 4 × lyophilized |
| PCR grade Water | 1 × 1.5 ml | 4 × 1.5 ml |

□ Ordering Information

Mycoplasma Kits

| Description | Quantity | Order No. |
|----------------------------|-----------------|------------------|
| Microsart® ATMP Mycoplasma | 25 | SMB95-1003 |
| Microsart® ATMP Mycoplasma | 100 | SMB95-1004 |

Accessories

| | | |
|---------------------------|----------------|------------|
| Microsart® AMP Extraktion | 50 extractions | SMB95-2003 |
|---------------------------|----------------|------------|

Related Products

| | | |
|--------------------------------|-----|------------|
| Microsart® AMP Mycoplasma | 25 | SMB95-1001 |
| Microsart® AMP Mycoplasma | 100 | SMB95-1002 |
| Microsart® RESEARCH Mycoplasma | 25 | SMB95-1005 |
| Microsart® RESEARCH Mycoplasma | 100 | SMB95-1006 |

■ Microsart® RESEARCH Mycoplasma

Rapid Real-time PCR *Mycoplasma* Detection Kit



Microsart® RESEARCH Mycoplasma enables a fast and reliable detection of *Mycoplasma* DNA in cell culture supernatants most applicable in research and development. The test procedure is successfully validated for specificity and sensitivity based on genome units. Carefully selected primer | probe combinations are highly specific for a region within the 16 S rRNA gene of at least 110 *Mycoplasma* species.

The use of TaqMan® probes adds specificity to the PCR detection system.

A standard DNA extraction followed by a TaqMan® probe real-time qPCR is used for the detection of *Mycoplasma* DNA. 2 µl sample volume can be used as starting material for DNA preparation. The isolated DNA is amplified in a qPCR cycle and the evaluation can be performed with the standard cycle software.

Feature & Benefits

Microsart® RESEARCH Mycoplasma is based on Real-time PCR technology
Easy-to-use and Fast: Results in hours not days!

Primers and probes detect a highly conserved region of the 16S rRNA gene of numerous *Mycoplasma* species
High specificity to detect all 9 *Mycoplasma* species according to EP & easy result interpretation

No specific hardware requirements
Easy implementation and no additional costs for hardware package

Applications

The Microsart® RESEARCH Mycoplasma real-time PCR protocol is especially designed for fast and reliable screening of cell culture supernatants most applicable in research and development, e. g. biotech and biopharmaceutical research and development, university and governmental research groups.

It is used for direct detection of *Mollicutes* (*Mycoplasma*, *Acholeplasma*, *Spiroplasma*) in cell culture, cell culture media components and derived biologicals.

Notice to purchaser: Limited License

Purchase of this product includes an immunity from suit under patents specified in the product insert to use only the amount purchased solely in industrial microbiology QA/QC field and also for the purchaser's own internal research. No other patent rights are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained by contacting the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

□ Specifications

Each kit contains reagents for 25 or 100 reactions. The expiry date of the unopened package is specified on the package label. The kit components are to be stored until use at +2 to +8°C and must be stored after opening and rehydration below -18°C. The lot specific Certificate of Analysis can be downloaded from the manufacturer's website (www.minerva-biolabs.com).

| Kit Component | 25 Reactions | 100 Reactions |
|--------------------|-----------------|-----------------|
| Order No. | SMB95-1005 | SMB95-1006 |
| Mycoplasma Mix | 1 × lyophilized | 4 × lyophilized |
| Rehydration Buffer | 1 × 1.0 ml | 3 × 1.0 ml |
| Positive Control | 1 × lyophilized | 1 × lyophilized |
| PCR grade Water | 1 × 1.0 ml | 1 × 1.0 ml |

□ Ordering Information

Mycoplasma Kits

| Description | Quantity | Order No. |
|--------------------------------|----------|------------|
| Microsart® RESEARCH Mycoplasma | 25 | SMB95-1005 |
| Microsart® RESEARCH Mycoplasma | 100 | SMB95-1006 |

Accessories

| | | |
|---------------------------|----------------|------------|
| Microsart® AMP Extraktion | 50 extractions | SMB95-2003 |
|---------------------------|----------------|------------|

Related Products

| | | |
|----------------------------|-----|------------|
| Microsart® AMP Mycoplasma | 25 | SMB95-1001 |
| Microsart® AMP Mycoplasma | 100 | SMB95-1002 |
| Microsart® ATMP Mycoplasma | 25 | SMB95-1003 |
| Microsart® ATMP Mycoplasma | 100 | SMB95-1004 |



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biotech

■ Air Monitoring

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Active Air Monitoring is the quantitative determination of microbes present in a given environment. To assure the quality of a manufacturing process, a valid method that eliminates adverse effects on the test area is mandatory.

Microbes are a potential threat of contamination for (final) products and raw materials, therefore potentially endangering health of humans and animals. Sampling of air with active devices is a commonly used method for evaluation of particles, microorganisms and even viruses and (bacterio)phages.

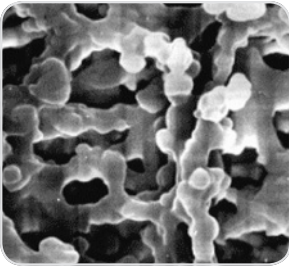
Whether its about testing the environment in most critical areas such as Isolators, filling lines and class B rooms, or evaluation of microbiological contamination in laboratories and warehouses. It's essential to be able to rely on the quality of results.

Active sampling of a defined volume of air in a defined time can be performed with physically two different methods: Filtration with Gelatine Membrane Filters (GMF) or Impaction on agarplates with BACTair™. Sartorius offers both solutions, depending on your application. Quantitative and qualitative results can be obtained by use of defined growth media.

Find out more about our Air Sampling solution and our extensive service package:

- Unique Gelatine Membrane Filter (GMF) for sampling of microorganisms, viruses & bacteriophages
- MD8 airscan® for use in class A environment and AirPort MD8 as a portable solution
- BACTAir™ Media plates for direct sampling and incubation
- EXTEND Instrument Services

■ Gelatine Membrane Filters (GMF)



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, pre-sterilized 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

| | |
|--------------------|--|
| Gelatine filters | Water soluble, pore size 3 µm, 80 mm diameter, thickness approx. 250 µm |
| Thermal resistance | Max. 60°C |
| 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 pre-sterilized by gamma irradiation |

Ordering Information

Disposable Gelatine Units, Sterile, Pack of 10

| Description | Order No. |
|---|------------------|
| Individually packed in 1 polyethylene bag each | 17528--80----ACD |
| Individually packed in 3 polyethylene bags each | 17528--80----BZD |
| Individually packed in 3 polyethylene bags each, but label on innermost bag | 17528--80----VPD |

Gelatine Disc Filter, Sterile, Sealed in Units of Five Each in a Polyethylene Bag

| Diameter | Package Size | Order No. |
|----------|--------------|------------------|
| 80 mm | 50 | 12602--80----ALK |
| 50 mm | 100 | 12602--50----ALN |
| 50 mm | 50 | 12602--50----ALK |
| 47 mm | 100 | 12602--47----ALN |
| 47 mm | 50 | 12602--47----ALK |
| 37 mm | 50 | 12602--37----ALK |

Special brochure available on request. Order no. 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 draw the air stream over the BACTair™ Culture Media Plates. 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 m³ in just 8 min
- Optimized geometry

□ Specifications

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

□ Ordering Information

BACTair™ Culture Media Plates with Agar, 110 mm, Individually, Sterile Packaged, 10 Units

| Determination of | Medium Type | Order No. |
|------------------|---------------------------|------------------|
| Total Count | Tryptic Soy Agar (TSA) | 14320-110----ACD |
| Yeasts and molds | Sabouraud Agar (acc. USP) | 14321-110----ACD |

Air Sampler

| Description | Order No. |
|--|-----------|
| AirPort MD8 Air Sampler for BACTair™ incl. charger | 16757 |

Accessories

| | Order No. |
|---|-----------------|
| Adapter for BACTair™ on the AirPort MD8 air sampler | 17803 |
| Covers for BACTair™ Culture Media Plates, 10×2 units individually, sterile packaged | 1ZPX-D0002 |
| BACTair™ Plates, sterile, without media, 50 units | 14301-110-----K |

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

MD8 airscan®

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 m³/h enables isokinetic sampling at flow rates that are usual in laminar flow as well as filtration of 1 m³ 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

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 | When the entered air flow rate cannot be attained, rate setting the display shows the max. attainable flow rate for a corresponding new setting below this value. |
| Included filter holder | 17655 (Gelatine disc filters) |

Ordering Information

MD8 airscan® Air Sampler

| Description | Order No. |
|--|-----------|
| MD8 airscan® air sampler, 230 V, 50 Hz | 16746 |
| MD8 airscan® air sampler, 115 V, 60 Hz | 16747 |

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

| Accessories | Order No. |
|---|-----------|
| Holder for disposable gelatine filter units | 17801 |

Consumables

| Disposable gelatine units, sterile, pack of 10 | Order No. |
|---|------------------|
| Individually packed in 1 polyethylene bag each | 17528--80----ACD |
| Individually packed in 3 polyethylene bags each | 17528--80----BZD |
| Individually packed in 3 polyethylene bags each, but label on innermost bag | 17528--80----VPD |

Special brochures available on request. Order no. SMI2001-e | SM-3011-e

■ AirPort MD8



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

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 |
| Inclusive adapter | 17801 (for disposable gelatine filter units) |

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

AirPort MD8

| Description | Order No. |
|---|-----------|
| AirPort MD8, complete with two adapters (17801 and 17803) and battery charger (69898525). | 16757 |

Accessories and Replacement Parts

| | Order No. |
|---|-----------|
| Adapter for BACTair™ on the AirPort MD8 air sampler | 17803 |
| Holder for disposable gelatine filter units | 17801 |
| Battery charger | 69898525 |

Ordering Information for Consumables

Please refer to the following pages.

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

■ Accessories

For the MD8 Air Samplers



■ Calibration Unit

The user can calibrate the MD8 aircan® 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 technicians will carry out a calibration of the MD8 at regular intervals

□ Specifications

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

□ Ordering Information

| Description | Order No. |
|---|-----------|
| Calibration unit for the MD8 air samplers | 16756 |

■ 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.

□ Ordering Information

| Description | Order No. |
|--|-----------|
| Flexible PVC hose with reinforced ends (2 m) | 17085 |
| Flexible PVC hose with reinforced ends (5 m) | 17088 |
| Silicone tubing, sterilizable (1 m, state length required) | 17662 |
| Set of connectors (consisting of 17658 and 17659), aluminum | 17657 |
| Connector (air sampler inlet to flexible hose), aluminum | 17658 |
| Connector (flexible hose to filter holder adapter), aluminum | 17659 |

■ Case

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

□ Ordering Information

| Description | Order No. |
|-----------------------------------|-----------|
| Case for MD8 airscan [®] | 17208 |

■ Aluminum 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.

□ Ordering Information

Aluminium Stack

| Description | Order No. |
|-------------------------------------|-----------|
| Aluminum stack for MD8 air samplers | 17656 |

Replacement Parts

| Description | Order No. |
|---|-----------|
| Individual filter holders for gelatine filter type 12602--80----ALK | 17655 |
| Middle part | 17660 |
| End cap | 17661 |

■ 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).

□ Ordering Information

| Description | Order No. |
|--|------------------|
| 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 | 17016 |
| 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 | 17030 |
| Clamp for 1"-1 1/2" sanitary flanges, stainless steel Clamp for 1"-1 1/2" sanitary flanges, stainless steel | 17033 |
| Connector (flexible hose to filter holder adapter), hose nipple, stainless steel | 17659---001 |
| Connector (flexible hose to filter holder adapter), tri clamp, stainless steel | 17659---003 |
| Adapter for gelatine filter disposables, stainless steel | 17801---001 |
| Sartofluor [®] MidiCap Capsule with PTFE membrane and sanitary flange inlet and outlet, for sterile air filtration inserted between the MD8 airscan [®] and isolator | 5185307TS-----SS |

■ 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:

- Via a PC (with Microsoft 95/98 or higher) with MD8 airscan[®] dialog system and cable connection to the MD8 airscan[®] (1ZE---0004).
- Via a PLC interface unit (1ZE---0003).

□ Ordering Information

| Description | Order No. |
|--|------------|
| Remote control (Interface) for MD8 airscan [®] designed for PLC units | 1ZE---0003 |
| Remote control for MD8 airscan [®] for use with PC (dialog system software) | 1ZE---0004 |

■ 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.

□ Ordering Information

Gelatine Disc Filters, 3 µm Pore Size, 80 mm, 50 Pieces/Pack

| Description | Order No. |
|---|---------------|
| Gelatine disc filter, sterile, sealed in units of five each in a polyethylene bag | 12602-080 ALK |

■ Further Consumables for Air Monitoring

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

□ Ordering Information

Cellulose Nitrate Membrane Filters, 80 mm Diameter, 100 Pieces/Pack

| Description | Order No. |
|--|------------------|
| Cellulose nitrate membrane filters, 0.8 µm, white with black grid, pre-sterilized in bags of 5 | 11404--80----ALN |
| Cellulose nitrate membrane filters, 0.8 µm, gray with white grid, pre-sterilized in bags of 5 | 13004--80----ALN |
| Cellulose nitrate membrane filters, 8 µm, white no grid, pre-sterilized in bags of 5 | 11301--80----ALN |

■ Preventive Maintenance

AirPort MD8 | MD8 airscan®



The objective of preventive maintenance is a continuous, precise operation of your equipment, to secure your investments for the long term and to guarantee correct and proper function.

Preventive maintenance will be performed in accordance with Sartorius' fixed standards and in between the contractually stipulated time intervals between the customer and Sartorius.

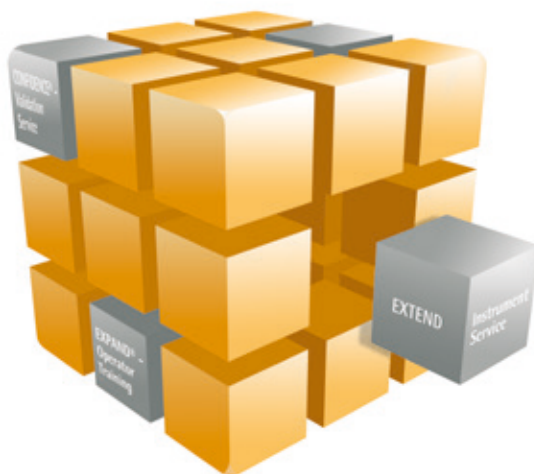
Prerequisites Required by the Customer

- Device is standing at the maintenance-location
- Unobstructed access to the equipment
- When ordering, a responsible person has to be appointed
- Access by automobile is possible | parking lot is available

Repairs, spare parts as well as shipping costs, travel costs and expenses are not covered in scope of services and will be invoiced separately.

□ Specifications

- Inspection visit at fixed intervals or as needed
- Visual inspection
- Maintenance check according to maintenance checklist
- Calibration of flow rate sensor
- Start-up test



■ Installation and Commissioning

AirPort MD8 | MD8 airscan®



The reliability and the service life of your equipment significantly depend on its installation and configuration according to the specifications.

Installation and commissioning by our service professionals will ensure that your MD8 successfully operates right from the start.

Sartorius Service installs and configures according to regulatory requirements and quality standards.

Prerequisites Required by the Customer

- System is standing at the installation location
- Unobstructed access to the system
- Power is available at the installation location
- When ordering, a responsible person has to be appointed

□ Specifications

- Check of scope of delivery
- Check of device for transport damage
- Manufacturer's ID label check
- Initial start-up
- Brief instructions to operating personnel (not application training)
- General maintenance discussion

□ Ordering Information

| Description | Order No. |
|---|-----------|
| Installation and Commissioning AirPort MD8 MD8 airscan® | S8739INST |



■ Chemical Compatibility

Table of Contents

108 Filter Materials

110 Filter Holder | O-ring Materials



1. Filter Materials

| Solvents | Cellulose Acetate 111 | Cellulose Nitrate 113 | Reg. Cellulose 184 | PTFE 118 | Polyamide 250 | Glass Fiber 134 | Polycarbonate 230 | Polyether-sulfone 154 |
|------------------------|--------------------------|--------------------------|-----------------------|-------------|------------------|--------------------|----------------------|--------------------------|
| 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.

| | Cellulose Acetate | Cellulose Nitrate | Reg. Cellulose | PTFE | Poly- amide | Glass Fiber | Polycar- bonate | Polyether- sulfone |
|---------------------------|----------------------|----------------------|-------------------|------|----------------|----------------|--------------------|-----------------------|
| 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% | ○ | ○ | ○ | ● | – | ? | – | ? |
| 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

E = compatible after replacing silicone O-ring with an EPDM O-ring

V = compatible after replacing the silicone O-ring with a Fluoroelastomer 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 | O-ring Materials

| | Glass | Poly-carbonate | Poly-propylene | PTFE | Stainless Steel | EPDM O-ring | PTFE O-ring | Silicone O-ring | Fluoro-elastomer 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 | Fluoro-elastomer 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.

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