



sartorius stedim
biotech

Combisart®
The economic way for fast
and reliable colony counting



turning science into solutions

Quality Management in...



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

Increasing our high quality standard.

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

Innovative manufacturing processes.

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

Application research and development.

Sartorius relies on their customers for input and experience to help guide our new product development. This interaction helps the Sartorius R&D team to create innovative products and systems that meet customer needs and exceed customer expectations.

Today, in cooperation with our partners and accredited science and research institutes at industrial centers throughout the world, Sartorius is developing the international standards of technology for tomorrow.

Up-to-date expertise through training.

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



...the Industry

Pharmaceutical Industry.

Quality requirements for pharmaceutical, chemical and cosmetic products are precisely defined. Worldwide pharmacopoeia and industrial organizations, such as the current editions of the EP, USP, JP, the American Standard Methods APHA as well as ISO standards provide guidelines and detailed specifications on product bioburden and particle content.

Food and Beverage Industry.

The consumer's steadily growing requirements for the quality and the longer shelf life of foods and beverages must be met by the manufacturer. In the food and beverage industries the microbiological and hygienic quality including the biological stability of the products are important criteria for their assessment. The reason: just a few microbes are often all it takes to spoil large quantities of a production run.

Quality Assurance.

The final product quality required can only be attained if the entire production process

is adequately and reliably protected against contamination.

Although the explosive technological development has reduced the risk of contamination by spoilage microbes, the issue of shelf life has taken on new dimensions as a result of the enormous production output now possible. Quality control of bottling and filling, in terms of chemical and, above all, biological stability, must be adapted to this development by state-of-the-art test methods.

Applications.

To assure the quality of a manufacturing process, appropriate in-process samples are taken of the raw materials and the final products. These samples are examined for the microbial colony and particle counts. Depending on the results, specific action is taken in production to guarantee product compliance with the quality specifications.

Colony Count.

Colony counting is the quantitative determination of microorganisms present in a

sample. The quantity can represent either the total bioburden, e.g., all bacteria, yeasts and molds; or the detection and quantification of a particular species of product-specific micro-organisms. The counts are expressed in colony-forming units per 1 ml sample volume (CFU/ml).

Particle analysis.

Particle count depends on the particle sizes found in the sample, and is expressed in units per sample for each particle spectrum.

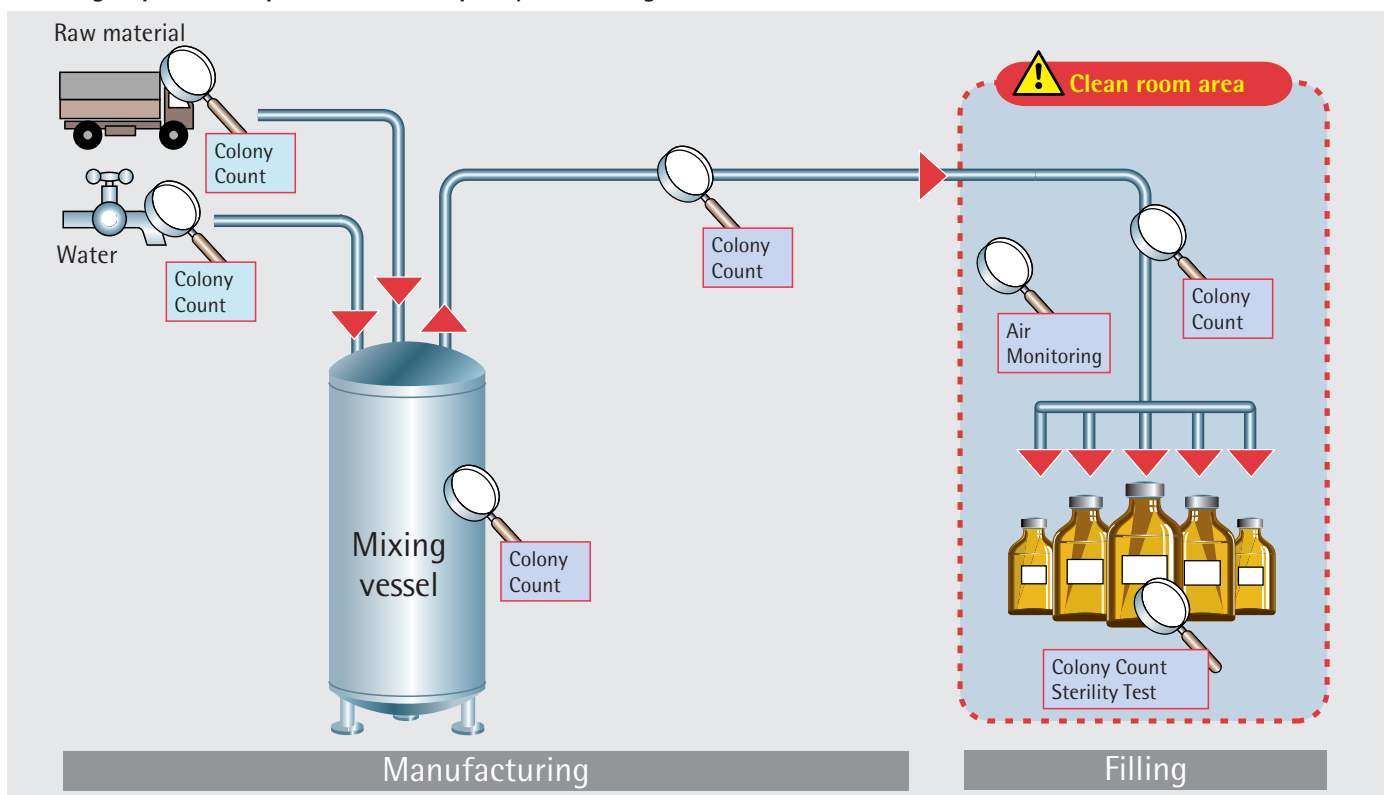
Air Monitoring.

Air monitoring involves active sampling of airborne microorganisms and viruses present in the air within the entire production area. The count is given in CFU/m³.

Sterility Test.

Sterility of the final product is determined by microorganism growth in prescribed liquid nutrient media. Results show whether the sample is sterile or unsterile.

Incoming inspection, in-process and final quality control (Fig.)



Your Requirements...

Methods.

Usually, precise instructions are given for performing a specific laboratory test. At Sartorius, we distinguish between the direct method and the membrane filter method. The direct method involves inoculation of the sample directly into liquid nutrient media. Instead Sartorius recommends the membrane filtration method in which microorganisms and particles are concentrated on the surface of a membrane filter and thus separated from the other constituents of a sample, such as inhibitors and liquids. Subsequently, the filter is quantitatively evaluated. This provides the following advantages:

Accurate detection of microorganisms.

- Quantitative determination of low bioburden in large sample volumes
- Inhibitors, such as antibiotics and preservatives, can be rinsed away
- Samples containing a high particle load can be prefiltered

Economy.

- No major equipment investment is needed
- Eliminates time-consuming, laborintensive preparation
- Long-lasting
- Easy to store
- Cost-effective

Results on file for future reference.

The results can be documented by attaching the dried membrane filters onto a test report for easy reference later

Low space requirements.

- Space-saving working area
- Space-saving storing area
- Small-volume autoclaves are suitable

Sartorius can help you select the appropriate membrane filtration products to provide this full range of benefits while meeting your regulatory i.g., membrane pore size, nutrient media requirements, etc.

Certificates.

For your quality assurance Sartorius exclusively offers certified products. A lot certificate is included in the package of each consumable product, indicating that the product meets the specifications for release. Our stainless steel filter holders are individually serial numbered. Moreover, Sartorius provides Validation Guides with detailed information on testing, results, and specifications on request.

Water*

International Pharmacopoeias such as EP, USP and JP, including their supplements, EG98/83, DIN/ISO, APHA-STM.



Cosmetics*

Based on the pharmacopoeias for pharmaceuticals.



Pharmaceuticals*

International Pharmacopoeias such as EP, USP and JP, including their supplements.



Juice*

International Federation of Fruit Juice Producers



Soft Drinks

Internal SOPs



Water*

Mineral water guidelines such as MNO



Beer*

Brewery guidelines such as EBC, JI Brew, MEBAK and VLB



Wine




Internal SOPs

* You will find detailed reference literature on page 20

...Are Our Performance

Over the years, the vacuum membrane filtration technique has established itself as the method of choice for colony counting and particulate analysis. Systems used for quality assurance testing by industry, at government testing laboratories and required by government regulatory authorities must meet the most stringent conditions, yet be economical at the same time. This table demonstrates, feature by feature, the range of performance standards met by innovative Sartorius products.

		Biosart® 100 Monitors	Biosart® 100 Media	Biosart® 250 Funnels	Nutrient Pad Sets	Membrane Filter	Combisart® Stainless steel devices	Glass	Polycarbonate
Reliable results									
Sterility of parts which are in contact with the sample	Sterile upon delivery	•	•	•	•	•			
	Autoclavable (121 °C or 134 °C)			•		•	•	•	•
	Sterilisable by dry heat (180 °C)						•	•	
Defined pore size and quantitative recovery rates acc. to international standards	Validation Guides available				•	•			
	Enclosed certificate confirms all specifications	•	•	•	•	•			
Certified quality builds confidence and assures clarity	In compliance with international standards such as EP, USP and ISO8199	•	•	•	•	•	•		
	Individual serial number						•		
	Easy to validate	•	•	•	•	•			
Writing a SOP	Easy to validate	•	•	•	•	•			
No growth inhibition caused by glues or binders on the membrane filter	Bio-inert materials	•	•	•	•	•	•	•	•
No false-negative results caused by secondary contamination of the culture media	The underside of the membrane filter is sterile-vented and/or the added media must pass through the membrane filters first	•	•	•	•	•	•	•	•
No false-positive results caused by secondary contamination of the sample	Lid for funnel is available	•					•	•	•
Membrane filter can be filed: The original filters are available for auditing at any time later	The filter with the incubated colonies can be removed, dried and glued onto a report for future reference	•	•	•	•	•	•	•	•
Colonies or particles are easy to see	Different filter colors offer contrasting backgrounds for each colony color	•	•	•	•	•	•	•	•
Parts which are in contact with the sample are particle free	Particles can be rinsed out			•		•	•	•	•
Easy disposal	Melt down by autoclaving	•							
Time-saving procedure									
Short filtration times	High flow rate	•		•	•	•	•	•	
	Large filtration area	•		•	•	•	•	•	
No filter changing in a sample	High throughput	•		•	•	•	•	•	
Few steps involved	Easy to use	•	•	•	•	•	•		

 Product completely satisfies all requirements	 Not necessary to meet this requirement	 Current data not available at present	 Product does not meet requirements or satisfies only part of them
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Combisart® Multi-branch Systems – Total Reliability From a Proven Concept

You can rely on Sartorius' experience to help you make a sound decision.

The right equipment for your application.

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

At the heart of the Combisart® system is a stainless steel manifold designed to accommodate all types of filter holders and funnels such as:

- Ready-to-use units, including Biosart® 100 Monitors and Biosart® 250 Funnels
- Flammable units such as stainless steel funnels for colony counting
- Autoclavable polycarbonate and glass filter holders


A special feature of the Combisart® manifold is that each filter unit can be individually vented. This rules out secondary contamination of the underside of the filter. 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. You can even pour out a non-filterable sample from each unit. And Combisart® makes filtration equally easy for left- or right-handed users in your laboratory, because funnels can be positioned to suit the individual user.

Maximum economy.

Requirements and applications may change over time. With Combisart®, you can quickly adapt your current equipment configuration to meet new requirements. This means that you can switch from a reusable filter holder to a disposable unit without requiring a new equipment investment.

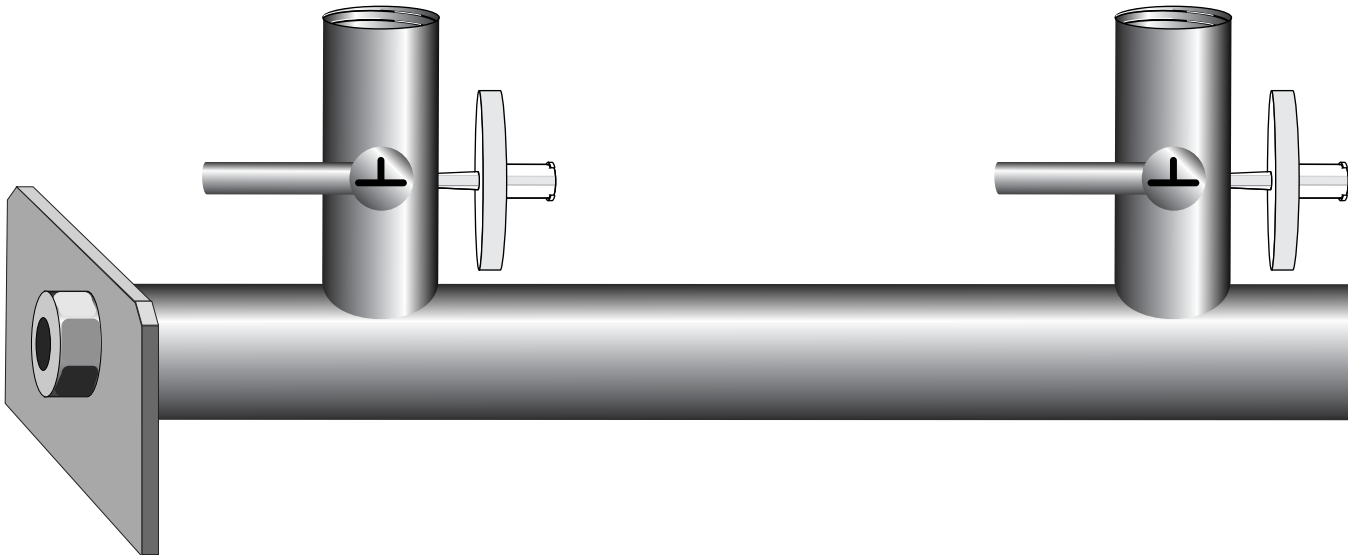
Whatever requirements you place on our products today, the choice of filter holders that best meet your needs is yours. Our field sales representatives will be happy to advise you concerning your specific requirements. Just ask us for an appointment.

To help you choose the Sartorius filter holders that best meet your needs, we have listed all systems on the following pages. You will find not only our product specifications and ordering information, but also an easy guide to locating the features you need.

One glance at the pictograms  will tell you how a particular product will meet your requirements.

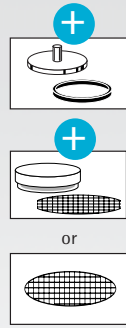
You will find a detailed overview of our individual systems on page 21.

Plus, you can fold out the last page to see a complete overview of our accessories while you view our Combisart® product information.



Stainless Steel Funnels; 40, 100, 500 ml

For colony or particle counting.



- Safe & reliable: Autoclavable; filter can be used for documentation; individual serial number
- Saves time: Sanitizable by flaming, easy to use
- Saves money: Low consumable costs
- Disposal: None, since funnels are reusable

Ordering information

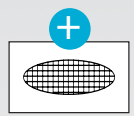
40 ml capacity
100 ml capacity
500 ml capacity

Order no.

6981004
6981065
6981002

Glass Filter Holder; 30 ml

For particle counting and hybridization tests.



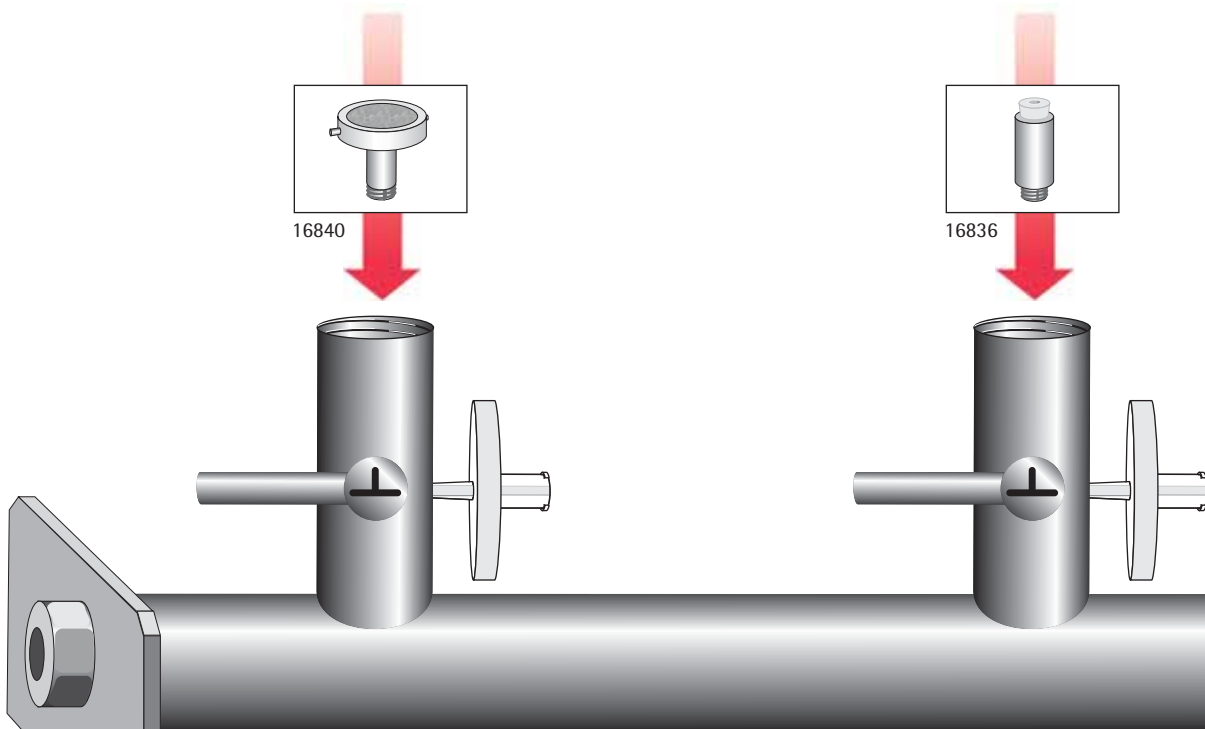
- Safe & reliable: Autoclavable; filter can be used for documentation
- Saves time: Easy to use
- Saves money: Low consumable costs
- Disposal: None, since filter holder is reusable

Ordering information

30 ml capacity

Order no.

16306



Combisart® manifolds, 1-, 3- and 6-branch.

Made of high-grade stainless steel (B.S. 304S31 | AISI 304); accommodates any type of vacuum funnel. Stainless steel three-way valves (taps)

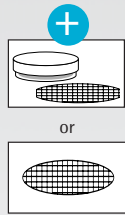
allow the vacuum for each filter holder to be individually controlled and each holder to be sterilely vented. The low height of the manifold ports is particularly advantageous for working on a clean bench.

Specifications

Dimensions (L H D)	3-branch manifold: 435 103 120 6-branch manifold: 910 103 120
Max. operating pressure	Vacuum or max. 2 bar (29 psi) pressure
Inlets	TR 20 x 2 female threads
Outlet	Hose nipple, DN 10
Sterilization	By autoclaving (134°C max.) By dry heat (180°C max.)

Glass Filter Holder; 250 ml

For colony and particle counting.



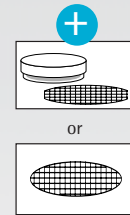
- Safe & reliable: Autoclavable, filter can be used for documentation
- Saves time: Easy to use
- Saves money: Low consumable costs
- Disposal: None, since filter holder is reusable

Ordering information
250 ml capacity

Order no.
16307

Polycarbonate Filter Holder; 250 ml

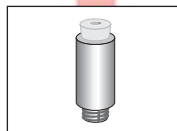
For colony and particle counting.



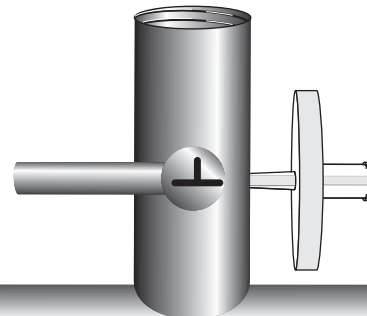
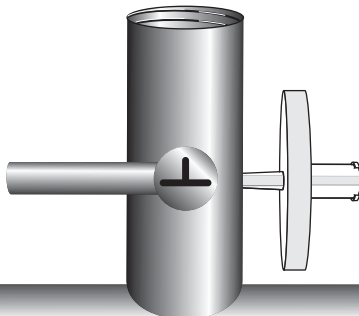
- Safe & reliable: Autoclavable; filter can be used for documentation
- Saves money: Low purchase price and cost of investment and consumables
- Disposal: None, since filter holder is reusable

Ordering information
250 ml capacity

Order no.
16511



16837



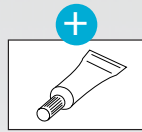
Accessories and replacement parts

Description	Pack size	Order no.
Minisart® SRP25, sterile filter for venting, 0.2 µm, 50 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 manifold female threads	3	6980235

Ordering information	Order no.
Combisart® 1-branch manifold	16844
Combisart® 3-branch manifold	16842
Combisart® 6-branch manifold	16843

Biosart® 100 Monitors; 100 ml

For colony counting.



- Safe & reliable: Individually packaged, sterile, validated, certified. Membrane filters: Meet ISO 7740; available in various colors; can be used for documentation; without any hydrophobic adhesive areas
- Saves time: Ready to use; practical design that is easy to use; magnifying glass on the lid; ensures high flow rates, high throughputs; no preparation time necessary
- Saves money: No additional equipment needed
- Disposal: Easy; can be melted down by autoclaving

Ordering information

0.2 µm, white|black, 47 mm

0.45 µm, white|black, 47 mm

0.45 µm, green|dark green, 47 mm

0.45 µm, gray|white, 47 mm

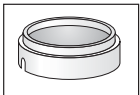
Order no.

16401-47-07-ACK

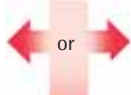
16401-47-06-ACK

16402-47-06-ACK

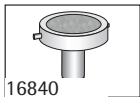
16403-47-06-ACK



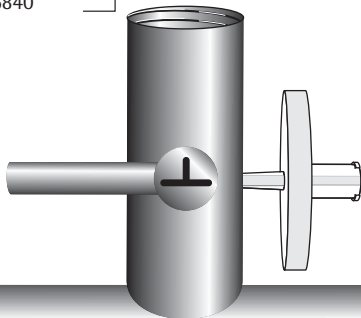
16414



16835

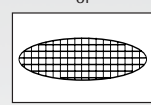
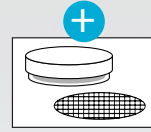


16840



Biosart® 250 Funnel; 250 ml

For colony and particle counting.



- Safe & reliable: Sterile, certified, filter can be used as documentation, can be autoclaved to a limited extent
- Saves time: Ready to use; practical design that is easy to use; ensures high flow rates, high throughputs; no preparation time necessary
- Saves money: No additional equipment needed

Ordering information

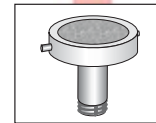
250 ml, 50 units, sterile

250 ml, 50 units, individually sterile

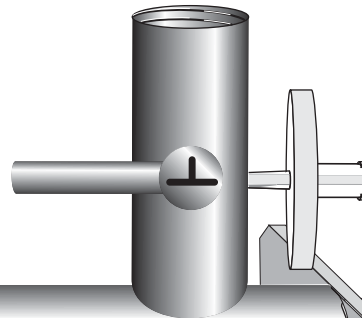
Order no.

16407-25-ALK

16407-25-ACK



16840

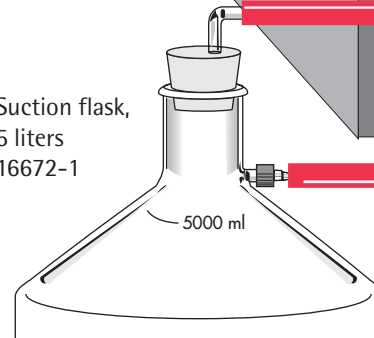


Combisart® Sets, stainless steel

	Capacity	Order no.
1-branch	1×100 ml	16844-CS
1-branch	1×500 ml	16845-CS
3-branch	3×100 ml	16824-CS
3-branch	3×500 ml	16828-CS
6-branch	6×100 ml	16832-CS
6-branch	6×500 ml	16831-CS

In each set stainless steel funnels with lids are preassembled.

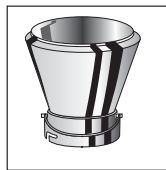
2| Suction flask,
5 liters
16672-1



Stainless Steel Funnels; 40, 100, 500 ml

For colony and particle counting.

Stainless steel funnel



Specially designed for use in microbiological quality assurance, these three filter holders made of high-grade stainless steel differ only in their capacity.

Their special locking clamp simplifies positioning and removal of the membrane filter, ensuring secure lock-down. For traceability, each funnel has an individual serial number.

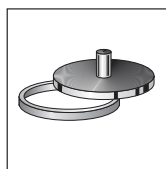
Specifications

Material	Stainless steel, AISI 304 (B.S. 304S31)
Capacity	40 ml, 100 ml or 500 ml
Filter diameter	47 mm (or 50 mm)
Filtration area	12.5 cm ²
Max. operating pressure	Vacuum only
Sanitization	By flaming
Sterilization	By autoclaving (134°C max.) By dry heat (180°C max.)

Order numbers

Order numbers	Description
6981004	Stainless steel funnel capacity 40 ml
6981065	Stainless steel funnel capacity 100 ml
6981002	Stainless steel funnel capacity 500 ml

Lids and gaskets



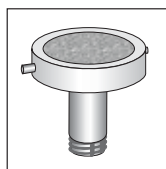
To avoid secondary contamination, the lid has a small central air port into which a cotton plug can be inserted.

The appropriate seal ensures that the lids are positioned perfectly, minimizing the risk of secondary contamination.

Order numbers

Order numbers	Description
6981063	Lid for 100 ml funnel AISI 304 stainless steel
6981064	Silicone lid seal (77.2 + 85.8 mm) for 100 ml funnel
6981001	Lid for 500 ml funnel AISI 304 stainless steel
6981003	Silicone lid seal (122 + 131 mm) for 500 ml funnel

Single base 16840



For adapting i.e. a stainless steel funnel for use on the manifold. The stainless steel frit used as the filter support is designed to ensure uni-

form distribution of microorganisms and particles on the membrane filter surface. The pins on both sides of the base for holding the funnel clamp can be positioned as required.

Specifications

Materials	AISI 304 stainless steel Gasket: Silicone flat gasket (41 × 50 × 1 mm)
Filter diameter	47 mm (or 50 mm)
Filtration area	12.5 cm ²
Max. operating pressure	Vacuum only
Sanitization	By flaming
Sterilization	By autoclaving (134°C max.) By dry heat (180°C max.)
Outlet	TR 20 × 2 mm male thread with DN 24 (~ 24 mm) hexagonal nut

Order numbers

Order numbers	Description
16840	Single base for stainless steel manifold, with frit

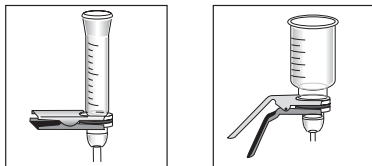
Replacements:

6980102	Stainless steel frit for 50 mm Ø membrane filters
6980103	Stainless steel frit for 47 mm Ø membrane filters
6980124	Silicone flat gasket underneath the frit
6980104	PTFE flat gasket underneath the frit
6980274	Silicone O-ring for 16840 male thread

Glass Filter Holders; 30, 250 ml

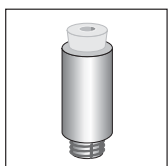
For colony and particle counting and for hybridization tests.

Glass filter holders



Two compact vacuum filter holders for easy particulate analysis and colony counting (30 ml holder also suitable for hybridization tests). Both the top and bottom part of the filter holders are easily and securely fastened together using the metal clamp. The center-ing rim on the filter support ensures correct positioning of the membrane filter. The glass frit filter support guarantees uniform distribution of retained microorganisms and particles on the filter surface.

Adapter, 16836 Adapter, 16837



For use of a glass filter holder, 16306 or 16307, on a Combisart® stainless steel manifold.

Specifications

Materials	Funnel and base	Borosilicate glass, 3.3
	Clamp	Anodized aluminum
Filter support	Filter support	PTFE Borosilicate glass, 3.3
	Lid	Silicone (250 ml filter holder only)
Gasket	Gasket	Silicone O-ring, 25 × 3 mm (30 ml filter holder) 45 × 3 mm (250 ml filter holder)
	Max. operating pressure	Vacuum only
Sterilization	By autoclaving	134°C max.
	By dry heat	180°C max.

Order number

Order number	Description
16306	Glass filter holder 30 ml Filter diameter 25 mm (or 24 mm) Prefilter, 20 mm Filtration area 3 cm ² Capacity 30 ml Outlet 12 mm outer diameter

Order number

Order number	Description
16307	Glass filter holder 250 ml Filter diameter 47 mm (or 50 mm) Prefilter, 40 mm Filtration area 12.5 cm ² Capacity 250 ml Outlet 15 mm outer diameter

Specifications

Materials	Base	AISI 304 stainless steel
	Stopper	Silicone
Max. operating pressure	Vacuum only	
	Sterilization	By autoclaving 134°C max. By dry heat 180°C max.
Outlet	TR 20 × 2 mm male thread	

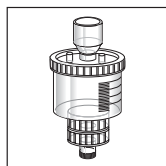
Order numbers

Order numbers	Description
16836	Adapter with 11 mm opening in stopper; for using filter holder 16306 on a Combisart® manifold
00280	Replacement stopper for 16836
16837	Adapter with 14 mm opening in stopper; for using filter holder 16307 on a Combisart® manifold
00281	Replacement stopper for 16837

Polycarbonate Filter Holders

For colony and particle counting.

Polycarbonate filter holder, 250 ml



This reusable, practical filter holder made of autoclavable plastic is ideal for microbiological and analytical testing outside the laboratory.

Specifications

Materials	Housing	Polycarbonate
	Filter support	Polypropylene
	Gaskets	Silicone O-rings, 40 × 5 mm; 80 × 3 mm; 14 × 2 mm
Capacity	250 ml	
Filter diameter	47 mm, prefilter 37 mm	
Filtration area	11.5 cm ²	
Max. operating pressure	Vacuum or 2 bar (29 psi) pressure max.	
Sterilization	By autoclaving (121°C max.)	
Outlet	TR 20 × 2 mm male thread	

Order number

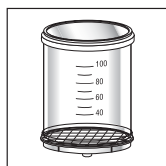
Description

16511	Polycarbonate filter holder, 250 ml
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Ready-to-use Biosart® 100 Monitors

For colony counting.

Biosart® 100 Monitors



Biosart® 100 Monitors have been specially designed for microbiological testing of pharmaceuticals and cosmetics, beverages and foods, 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.

Culture media for wetting the pad are available in individually sterilized, convenient plastic ampoules. Each box contains 50 ampoules, each with 2.5 ml and a lot certificate. If stored under the proper conditions (+4°C), the culture media have a shelf life up to one year. For more information, see the chart on the next page.

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

Specifications

Materials	Housing	Polystyrene
	Membrane filter	Cellulose nitrate; choice of white, green or gray, with grid; Regenerate Cellulose, white; can be used as documentation
	Pad	Cellulose
	Plug adapter	Polyethylene
Capacity	100 ml, 10 ml graduations	
Pore size	0.2 µm, 0.45 µm, 0.8 µm	
Filter diameter	47 mm	
Filtration area	14.5 cm ²	
Max. operating pressure	Vacuum only	
Outlet	6.5 × 1.5 mm	
Lot certificates	Recovery rate, sterility and specifications	

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

Order numbers	Pore size	Membranefilter* Filter color grid
16401-47-07-ACK	0.2 µm	Cellulose nitrate white black
16401-47-06-ACK	0.45 µm	Cellulose nitrate white black
16402-47-06-ACK	0.45 µm	Cellulose nitrate green dark green
16403-47-06-ACK	0.45 µm	Cellulose nitrate gray white*

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

16401-47-07----K	0.2 µm	Cellulose nitrate white black
16401-47-H6----K	0.45 µm High Flow	Cellulose nitrate white black
16401-47-06----K	0.45 µm	Cellulose nitrate white black
16402-47-06----K	0.45 µm	Cellulose nitrate green dark green
16403-47-06----K	0.45 µm	Cellulose nitrate gray white*
16403-47-04----K	0.8 µm	Cellulose nitrate gray white*
16404-47-06----K	0.45 µm	Regenerated cellulose white

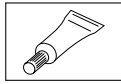
Biosart®100 Monitors, 100 ml, 47 mm, sterile, 48 units

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

*) Gray membranes after wetting black

Biosart® 100 Nutrient Media

Which type for which application?

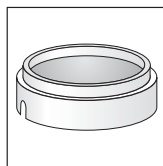


Detection Target and Reference*	Test Sample Materials	Media Type (pH) Order No.	Recomm. Monitor Type	Typical results
Total count acc. to APHA (dairy), APHA (food), APHA (water), AOAC, DAB, EG 98/83, EP, FDA, IDF, ISO 8199, ISO 9308-1 [1990], ISO 9308-1 [2001], USDA, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), waste water, food	Caso (pH 7.3) 16400-02----CA-K	16402 Green with dark green grid	Predominantly bacteria of different sizes, shapes and colors
Total count acc. to APHA (water), EP, Internal SOPs.	Water for pharma purpose, water (general quality), waste water	R2A (pH 7.2) 16400-02----RA-K	16402 Green with dark green grid	Predominantly bacteria, most of them are white or colorless
Total count acc. to APHA (dairy), APHA (food), APHA (water), API, Internal SOPs.	Raw materials, water (general quality), natural water, waste water, beverages, soft drinks, concentrates, foods	TGE Tryptone Glucose Extract (pH 7.0) 16400-02----TC-K	16402 Green with dark green grid	Predominantly bacteria of different sizes, shapes and colors
Total count acc. to Internal SOPs.	Soft drinks, concentrates, sugar, sugar products	Total Count TTC (pH 7.0) 16400-02----TZ-K	16402 Green with dark green grid	Predominantly bacteria, the majority of their colonies are stained red by TTC reduction
E. coli and coliforms acc. to APHA (dairy), APHA (food), APHA (water), DGHM, ISO 9308-1 [1990], MNO, USDA, Internal SOPs.	Raw materials, water (general quality), natural water, waste water, beverages, soft drinks, concentrates, fruit juice, sugar, sugar products, foods	Endo (pH 7.2) 16400-02----EN-K	16401 White with black grid	E. coli form red colonies with a metallic sheen, other coliforms grow as dark to light red colonies without metallic sheen
E. coli and coliforms acc. to APHA (food), APHA (water), AOAC, EPA, FDA, ISO 9308-1 [1990], USDA, Internal SOPs.	Raw materials, water (general quality), waste water, beverages, foods	m FC (pH 7.4) 16400-02----MF-K	16401 White with black grid	E. coli and coliform bacteria form blue colonies with a blue surrounding
E. coli and coliforms acc. to AFNOR, APHA (water), BS, FDA, ISO 9308-1 [1990], USDA, Internal SOPs.	Water (general quality), waste water, beverages, foods	Lauryl Sulphate Teepol (pH 6.8) 16400-02----LS-K	16401 White with black grid	E. coli and coliform bacteria form 1-2 mm diameter yellow colonies with a yellow zone
E. coli and coliforms acc. to APHA (food), EG 98/83, ISO 8199, ISO 9308-1 [1990], ISO 9308-1 [2001], Internal SOPs.	Raw materials, water (general quality), waste water, beverages, foods	Tergitol TTC (pH 6.9) 16400-02----TT-K	16401 White with black grid	E. coli forms orange colonies with a yellow surrounding. Coliform colonies are red, some with yellow zones, others are red
Enterococci acc. to APHA (food), APHA (water), EG 98/83, HMSO, ISO 7899-2, ISO 8199, LMBG, MNO, Internal SOPs.	Raw materials, water (general quality), natural water, waste water, beverages, foods	KF Strep Azide (pH 7.2) 16400-02----KF-K	16402 Green with dark green grid	Enterococci form red, pink or reddish brown colonies with a diameter of 05 – 2 mm
Pseudomonas aeruginosa acc. to APHA (water), AOAC, ASM, DAB, DIN 38411, EG 98/83, EP, FDA, ISO 8199, EN 12780, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), waste water, foods	Cetrimide (pH 7.2) 16400-02----CE-K	16401 White with black grid	Pseudomonas aeruginosa forms blue, blue-green or yellow-green colonies with blue zones. The colonies show fluorescence in UV-light
Yeasts and molds acc. to APHA (food), AOAC, EP, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), waste water	Sabouraud (pH 5.6) 16400-02----SB-K	16403 Gray with white grid	Yeasts develop smooth white, rarely colored colonies. Molds generally form velvety or fluffy, cotton-like colonies
Yeasts and molds acc. to Internal SOPs.	Wine, soft drinks, concentrates, sugar, sugar products	m Green yeast and mold Schaufus Pottinger (pH 4.6) 16400-02----MG-K	16401 White with black grid	Yeasts develop smooth white, rarely colored colonies. Molds generally form velvety or fluffy, cotton-like colonies
Yeasts and molds acc. to Internal SOPs.	Soft drinks, concentrates, sugar, sugar products	m Green yeast and mold selective (pH 4.6) 16400-02----GS-K	16403 Gray with white grid	Yeasts develop smooth white, rarely colored colonies. Molds generally form velvety or fluffy, cotton-like colonies
Yeasts and molds and bacteria acc. to Internal SOPs.	Beverages, beer, wine, soft drinks, concentrates, fruit juice	WL Nutrient Wallerstein (pH 5.5) 16400-02----WN-K	16401 White with black grid	Yeasts grow as yellowish green colonies. Molds generally form velvety or fluffy cotton-like colonies
Bacteria in fermentation processes acc. to Internal SOPs.	Beverages, beer, wine, soft drinks, concentrates, fruit juice	WL Differential Wallerstein Diff (pH 5.5) 16400-02----WL-K	16401 White with black grid	Bacteria grow as white or cream opaque colonies
Yeasts and molds and bacteria acc. to VLB, Internal SOPs.	Raw materials, beverages, beer, wine, soft drinks, concentrates, foods	Wort (pH 4.4) 16400-02----WZ-K	16403 Gray with white grid	Yeasts develop smooth white or colored colonies, molds from velvety or fluffy cotton-like colonies
Acid-tolerant microorganisms acc. to APHA (water), IFU, MPP (packaging staff), Internal SOPs.	Raw materials, water (general quality), waste water, wine, soft drinks, concentrates, fruit juice, foods	Orange Serum (pH 5.5) 16400-02----OS-K	16402 Green with dark green grid	Only acid-tolerant microorganisms can grow on this medium such as lactic acid bacteria, yeast and molds

*) Reference Guide on page 20

Adapters for Biosart® 100 Monitors

Biosart® 100 Monitor adapters



For adapting Biosart® 100 monitors onto the filter support of a Combisart® stainless steel system. The adapters ensure that the

Monitors are positioned perfectly level minimizing the risk of contamination during filtration.

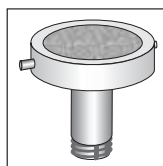
Specifications

Material	Silicone
Max. operating pressure	Vacuum only
Sterilization	By autoclaving (134°C max.)

Order number	Description
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16414	Adapter for Biosart® 100 Monitors for use on single base, 16840 (or 16841)
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Single base, 16840



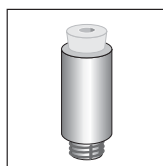
For holding the Biosart® 100 adapter, 16414

Order number	Description
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16840	Stainless steel filter support for Combisart® stainless steel manifold. See page 10 for specifications
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Adapter, 16835

For adapting Biosart® 100



Monitors for use on a Combisart® stainless steel manifold. This adapter is attached to the polyethylene adapter – included in the Monitor packaging

– which is connected to the outlet of the Monitor. The bottom thread of the 16835 adapter is then attached directly to the manifold.

Specifications

Materials	Base	AISI 304 stainless steel
	Stopper	Silicone
Max. operating pressure	Vacuum only	
Sterilization	By autoclaving (134°C max.) By dry heat (180°C max.)	
Outlet	TR 20 × 2 male thread	

Order number	Description
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16835	Adapter with 10 mm opening in stopper; for using Biosart® 100 Monitors on a Combisart® manifold
00279	Replacement stopper for 16835

Biosart® 100 Monitor adapters



For adapting the Biosart® 100 Monitor onto other vacuum filter holder supports. The adapters ensure that the

Monitors are positioned perfectly level minimizing the risk of contamination during filtration.

Specifications

Materials	Polypropylene
Max. operating pressure	Vacuum only
Sterilization	By autoclaving (134°C max.)

Order number	Description
--------------	-------------

16415	Adapter, for using the Biosart® 100 Monitors on a vacuum filter holder support with a 50 mm Ø (WM)
16416	Adapter, for using the Biosart® 100 Monitors on a vacuum filter holder support with a 59 mm Ø (MP)

Ready-to-use Biosart® 250 Funnels

For colony and particle counting.

Biosart® 250 Funnel



The Biosart® 250 Funnel has been specially designed for microbiological and analytical quality assurance in industry.

The sterile 250 ml plastic funnel guarantees fast filtration and high sample throughputs during routine testing. Its large inner diameter allows high flow rates, and the tapered inner walls permit thorough flushing of the funnel, after filtration.

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

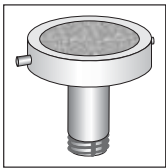
Order number

16407-25-ALK
16407-25-ACK

Description

Biosart® 250 Funnel, 50 units, sterile-packaged
Biosart® 250 Funnel, 50 units, individually sterile-packaged

Single support, 16840



For adapting a Biosart® 250 Funnel for use on a Combisart® stainless steel manifold.

Order number

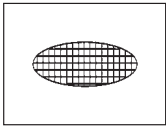
16840

Description

Stainless steel filter support for stainless steel manifold
See page 10 for specifications

Gridded Membrane Filters

Gridded membrane filters

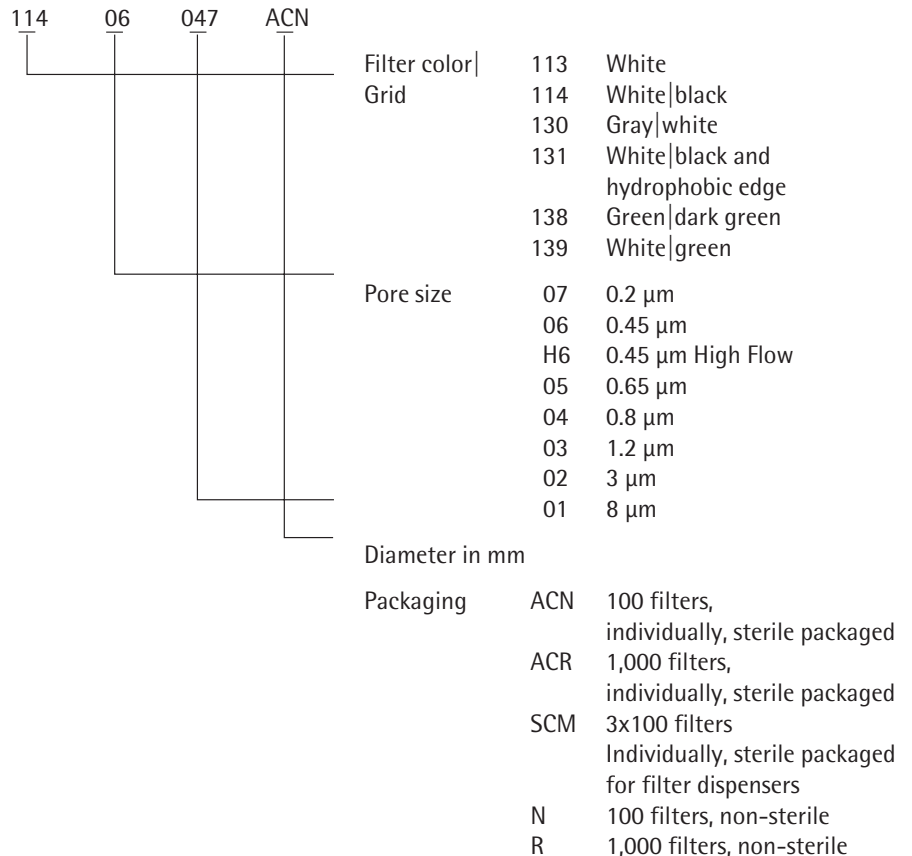


Sartorius cellulose nitrate (cellulose ester) membrane filters are offered in a choice of three different colors

to suit your specific test application, and provide a high-contrast background. For simple evaluation of the results, the grid divides the filtration area into 130 squares, each measuring 3.1 × 3.1 mm. The membrane filters are individually packaged and sterilized, and undergo stringent quality assurance testing. The certificate included in every package documents the quality assurance tests as well as the compliance of the 0.45 µm membrane filter with ISO 7704.

The special pore structure of the new 0.45 µm HighFlow membrane filters allow shorter filtration times due to higher flow rates and throughputs. As every Sartorius 0.45 µm membrane filter lot these membranes are also tested and released according to ISO 7704.

Ordering diagram



Nutrient Pad Sets (NPS)

For colony counting.

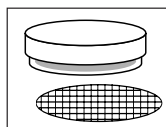
Microorganisms require the appropriate culture media for optimal reproduction. Ready-to-use Nutrient Pad Sets (NPS) consist of a pad with culture medium in a petri dish and a gridded membrane filter. Made of inert cellulose, the nutrient pad is already impregnated with a culture medium of a specific formula and dehydrated. Each nutrient pad is individually "plated" in a petri dish and sterilized. Just moisten the nutrient pad with 3.5 ml of sterile, deionized water to reactivate the medium. NPS are continuously enhanced as part of our development program to adapt our products to changing application

requirements. Besides the new NPS types, we have also updated our packaging design. The standard NPS box contains 100 sterile Nutrient Pads, each of which is individually inserted in a petri dish and sterilized. Ten each of these petri dishes are sealed in an aluminum bag. This special packaging in bags protects the sensitive formula constituents of the Nutrient Pad 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 ranging from 18 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.

All Nutrient Pad Sets are conveniently supplied with the appropriate membrane filters, which are also individually packaged and sterilized.

These products undergo traceable quality assurance tests on the basis of which a lot certificate is issued and included in every package.



Which type for which application?

Detection Target and Reference ¹	Test Sample Materials	Media Type (pH) Order No. (filter type) ^{2,3}	Recom. Incubation Conditions	Typical results
Total count acc. to APHA (dairy), APHA (food), APHA (water), AOAC, DAB, EG 98/83, EP, FDA, IDF, ISO 7704, ISO 8199, ISO 9308-1 [1990], ISO 9308-1 [2001], USDA, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), waste water, foods	Caso (pH 7.3) 14063--47-----N (1)	up to 5d at 32.5 ± 2.5°C	Predominantly bacteria of different sizes, shapes and colors
Total count acc. to APHA (water), EP, ISO 7704, Internal SOPs.	Water for pharmaceut. purpose, water (general quality), waste water	R2A (pH 7.2) 14084--47-----N (1)	48–72 h at 35 ± 2°C; 5–7 days at 20 ± 2°C	Predominantly bacteria of different sizes and shapes. Most of them are white or colorless
Total count acc. to APHA (water), ISO 7704, VLB, Internal SOPs.	Raw materials, water (general quality), waste water, beverages, beer, foods	Standard (pH 7.2) 14064--47-----N (1)	2–5d at 30 ± 2°C	Predominantly bacteria grow on this medium. The morphology and color of their colonies vary
Total count acc. to APHA (water), ISO 7704, VLB, Internal SOPs.	Raw materials, water (general quality), natural water, waste water, beverages, beer, foods	Standard TTC (pH 7.2) 14055--47-----N (1)	2–5d at 30 ± 2°C	Predominantly bacteria grow on this medium. The majority of their colonies are stained red by TTC reduction
Total count acc. to APHA (water), ISO 7704, VLB, Internal SOPs.	Raw materials, water (general quality), natural water, waste water, beverages, beer, foods	Standard TTC I mod. (pH 7.2) 14085--47-----N (1)	2–5d at 30 ± 2°C	Predominantly bacteria grow on this medium. The majority of their colonies are stained red by TTC reduction
Total count acc. to APHA (dairy), APHA (food), APHA (water), API, ISO 7704, Internal SOPs.	Raw materials, water (general quality), natural water, waste water, beverages, soft drinks, concentrates, foods	TGE Tryptone Glucose Extract (pH 7.0) 14076--47-----N (1)	2–5d at 30 ± 2°C	Predominantly bacteria of different sizes, shapes and colors
Total count acc. to EG 98/83, HMSO, ISO 6222, ISO 7704, ISO 8199, Internal SOPs.	Water (general quality), natural water	Yeast extract (pH 7.2) 14090--47-----N (1)	44 ± 4h at 36 ± 2°C; 68 ± 4h at 22 ± 2°C	Predominantly bacteria grow on this medium. The majority of all colonies are colorless
E. coli and coliforms acc. to ISO 7704, Journal Food Protection, ZenHyg (journal of hygiene), Internal SOPs.	Raw materials, water (general quality), waste water, beverages, foods	Chromocult (pH 6.8) 14087--47-----N (7)	24 h at 36 ± 1°C	E. coli develops dark-blue to violet colonies, other coliforms red to pink colonies
E. coli acc. to APHA (water), DIN 10110, EG 98/83, ISO 7704, ISO 8199, ISO 9308-1 [2001], LMBG, USDA, Internal SOPs.	Raw materials, water (general quality), waste water, beverages, foods	ECD (pH 7.0) 14082--47-----N (2)	18–24 h at 37 ± 1°C or acc. to ISO 9308-1	Colonies that show light blue fluorescence under UV light (360 nm) indicate E coli
E. coli and coliforms acc. to APHA (dairy), APHA (food), APHA (water), DGHM, ISO 7704, ISO 9308-1 [1990], MNO, USDA, Internal SOPs.	Raw materials, water (general quality), natural water, waste water, beverages, soft drinks, concentrates, fruit juice, sugar, sugar products, foods	Endo (pH 7.2) 14053--47-----N (9)	24 ± 2 h at 36 ± 2°C or acc. to ISO 9308-1 [1990]	E. coli form red colonies with a metallic sheen, other coliforms grow as dark to light red colonies without metallic sheen

Detection Target and Reference ¹	Test Sample Materials	Media Type (pH) Order No. (filter type) ^{2,3}	Recom. Incubation Conditions	Typical results
Enterobacteria, E. coli acc. to APHA (dairy), APHA (food), APHA (water), AOAC, DAB, DIN 38411, DGHM, EP, ISO 7704, LMBG, MNO, USDA, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), natural water, waste water, beverages, soft drinks, concentrates, fruit juice, foods	MacConkey (pH 7.1) 14097--47-----N (2)	18–24 h at 36 ± 2°C	E. coli forms large red, coliform microbes form large pink, lactose-negative enterobacteria form colorless colonies, gram-positive microbes are inhibited
E. coli and coliforms acc. to APHA (food), APHA (water), AOAC, EPA, FDA, ISO 7704, ISO 9308-1 [1990], USDA, Internal SOPs.	Raw materials, water (general quality), waste water, beverages, foods	m FC (pH 7.4) 14068--47-----N (2) 14068--50-----PDN (2) closed petri dishes	20 ± 4 h at 36 ± 2°C (44 ± 1°C water bath)	Lactose-positive microorganisms develop blue colonies with a blue zone, lactose-negative colonies are red or colorless
E. coli and coliforms acc. to AFNOR, APHA (water), BS, FDA, ISO 7199, ISO 9308-1 [1990], USDA, Internal SOPs.	Water (general quality), waste water, beverages, foods, other products	Teepol Lauryl Sulphate (pH 7.2) 14067--47-----N (2)	18–24 h at 36 ± 1°C	Lactose-positive microorganisms develop yellow colonies with a yellow zone
E. coli and coliforms acc. to APHA (food), EG 98/83, ISO 7704, ISO 8199, ISO 9308-1 [1990], ISO 9308-1 [2001], Internal SOPs.	Raw materials, water (general quality), waste water, beverages, foods	Tergitol TTC (pH 8.0) 14056--47-----N (2)	21 ± 3 h at 36 ± 2°C	E. coli forms yellow colonies with a yellow surrounding, Enterobacter colonies are orange with a small yellow surrounding, coliform colonies are red
Enterococci acc. to APHA (food), APHA (water), EG 98/83, HMSO, ISO 7704, ISO 7899-2, ISO 8199, LMBG, MNO, Internal SOPs.	Raw materials, water (general quality), natural water, waste water, beverages, foods	Azide (pH 7.2) 14051--47-----N (1)	44 ± 4h at 36 ± 2°C	Enterococci form red, pink or reddish brown colonies with a diameter of 0.5 – 2 mm
Salmonellae acc. to AFNOR, APHA (dairy), APHA (food), AOAC, DGHM, FDA, HMSO, IDF, ISO 6579 [1981], ISO 7704, USDA, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), waste water, foods	Bismuth Sulphite (pH 7.6) 14057--47-----N (1)	up to 48 h at 36 ± 2°C	Most salmonellae form light colored colonies with brown to black centers surrounded by a black zone with a metallic sheen ("fish eye")
Pseudomonas aeruginosa acc. to APHA (water), AOAC, ASM, DAB, DIN 38411, EG 98/83, EP, FDA, ISO 7704, ISO 8199, EN 12780, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), waste water, foods	Cetrimide (pH 7.1) 14075--47-----N (2)	48 ± 4 h at 37 ± 1°C	Pseudomonas aeruginosa forms blue, blue-green or yellow-green colonies with blue zones, the colonies show fluorescence in UV-light
Staphylococci, Staph. aureus acc. to APHA (food), AOAC, DGHM, FDA, HMSO, ISO 7704, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), waste water, foods	Chapman (pH 7.4) 14074--47-----N (2)	up to 3d at 36 ± 2°C	Staphylococcus aureus forms yellow colonies with a yellow surrounding (mannitol-positive)
Wild yeasts acc. to Journal Institute of Brewing, VLB, Internal SOPs.	Beer	Lysine (pH 5.0) 14061--47-----N (3)	2–5 days at 25–28°C	Only "wild yeasts" (not belonging to the genus Saccharomyces) grow on this medium, they form white or cream colored colonies
Yeasts and molds acc. to APHA (food), AOAC, IFU, Internal SOPs.	Beverages, wine, soft drinks, concentrates, fruit juice, foods	Malt Extract (pH 3.5) 14086--47-----N (6) 14086--47----CCN (8)	up to 3d at 25 ± 2°C or 7d at 30 ± 2°C	Yeasts develop smooth white, rarely colored colonies, molds generally form velvety or fluffy, cotton-like colonies
Yeasts and molds acc. to APHA (food), AOAC, EP, USP, Internal SOPs.	Pharmaceuticals, cosmetics, raw materials, water (general quality), waste water	Sabouraud (pH 5.6) 14069--47-----N (3)	up to 5 days at 20–25°C	Yeasts develop smooth white, rarely colored colonies, molds generally form velvety or fluffy, cotton-like colonies
Yeasts and molds acc. to Internal SOPs.	Wine, soft drinks, concentrates, sugar, sugar products	Schaufus Pottinger m Green yeast and mold (pH 4.4) 14070--47-----N (4) 14072--47-----N (5) 14080--47-----N (6) 14083--47-----N (3) 14091--47-----N (8)	2–7 days at 25–30°C	Yeasts develop smooth white, rarely colored colonies, molds generally form velvety or fluffy, cotton-like colonies
Yeasts and molds and bacteria acc. to ISO 7704, Internal SOPs.	Beverages, beer, wine, soft drinks, concentrates, fruit juice	Wallerstein WL Nutrient (pH 5.5) 14089--47-----N (2)	up to 14 days at 25–30°C aerobic or anaerobic depending on the target of the investigation	Yeasts grow as yellowish green colonies, molds generally form velvety or fluffy cotton-like colonies
Yeasts and molds acc. to VLB, Internal SOPs.	Raw materials, beverages, beer, wine, soft drinks, concentrates, foods	Wort (pH 4.4) 14058--47-----N (3)	2–5 days at 25–30°C	Yeasts develop smooth white or colored colonies, molds form velvety or fluffy cotton-like colonies

Detection Target and Reference ¹	Test Sample Materials	Media Type (pH) Order No. (filter type) ^{2,3}	Recom. Incubation Conditions	Typical results
Thermophilic spore formers and mesophilic bacteria acc. to APHA (dairy), APHA (food), AOAC, ICUMSA, IFU, ISO 7704, NCA, Internal SOPs.	Fruit juice, sugar, sugar products, foods	Glucose Tryptone (pH 6.8) 14066--47-----N (2)	48 h at 55 ± 2°C or up to 3d at 31 ± 1°C	Microorganisms that ferment glucose and produce acid grow as yellowish green colonies
Leuconostoc oenos and other wine spoiling microorgan. acc. to ISO 7704, LanaridrisEt Lafon-Lafourcade; Internal SOPs.	Wine, fruit juice	Jus de Tomate Tomato Juice (pH 4.4) 14079--47-----N (1)	4–6 days (up to 8d) at 28–30°C	Lactobacilli: whitish to slightly yellowish Pediococci: whitish to slightly brownish Oenococcus oeni: colorless to whitish colonies
Acid-tolerant microorganisms acc. to APHA (water), IFU, ISO 7704, MPP (packaging staff), Internal SOPs.	Raw materials, water (general quality), waste water, wine, soft drinks, concentrates, fruit juice, foods	Orange Serum (pH 5.5) 14062--47-----N (1)	up to 3d at 30 ± 2°C aerobic or anaerobic	Only acid-tolerant microorganisms can grow on this medium such as lactic acid bacteria, acetic acid bacteria, yeasts and molds
Acid-tolerant microorganisms acc. to APHA (water), IFU, MPP (packaging staff), Internal SOPs.	Raw materials, water (general quality), waste water, wine, soft drinks, concentrates, fruit juice, foods	Orange Serum (pH 3.2) 14096--47-----N (6)	up to 3d at 30 ± 2°C aerobic or anaerobic	Only acid-tolerant microorganisms can grow on this medium such as lactic acid bacteria, acetic acid bacteria, yeasts and molds
Lactobacilli and Pediococci and other beer spoiling microorganisms acc. to EBC, ISO 7704, MEBAC, VLB, Internal SOPs.	Beer	VLB-S7-S (pH 5.5) 14059--47-----N (2)	5–7 days at 25–28°C, anaerobic	Pediococci ("Sarcina") develop pale green and Lactobacilli slightly rounded, irregularly lobed colonies which are initially light green and later dark green
Mesophilic slime-forming bacteria, esp. Leu. mesenteroides acc. to ICUMSA, ISO 7704, Internal SOPs.	Soft drinks, concentrates, sugar, sugar products	Weman (pH 5.5) 14065--47-----N (1)	2–3 days at 25–30°C	The colonies of slime-forming mesophilic bacteria are smooth, round, usually colorless and transparent or translucent, some have a diameter greater than 5 mm

¹) Reference Guide on page 20

²) 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

³) Diameter of the membrane filter, 47 mm. Order number for Nutrient Pad Set with 50 mm membrane filter as above, but --47-----N replaced by --50-----N.

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

Typical Application Examples

Product	Detection and enumeration of...	Nutrient Pad and Biosart® 100 Media type
Beer	Lactobacilli and Pediococci and other beer spoiling organisms	VLB-S7-S, Wallerstein Differential
	Total colony count	Standard, Standard TTC, Total Count TTC
	Wild yeasts	Lysine
	Yeasts and molds	Malt Extract*, Wallerstein Nutrient, Wort
Foods	Acid-tolerant microorganisms	Orange Serum
	Enterobacteria, E. coli and coliforms	Chromocult, ECD, Endo, (MacConkey), m FC, Teepol Lauryl Sulphate, Tergitol TTC
	Enterococci, Enterococcus faecalis	Azide KF Strep
	Pseudomonas aeruginosa	Cetrimide
	Salmonellae	Bismuth Sulfite
	Staphylococci, Staphylococcus aureus	Chapman
	Thermophilic spore formers and mesophilic bacteria	Glucose Tryptone
	Total colony count	Caso, Standard, Standard TTC, TGE Tryptone Glucose Extract
	Yeasts and molds	Malt Extract, Wort
Fruit juice	Enterobacteria, E. coli and coliforms	Endo, (MacConkey), Tergitol TTC*
	Oenococcus and other product spoiling organisms	Jus de Tomate Tomato Juice, Orange Serum, Wallerstein Differential
	Yeasts and molds	Malt Extract, Schaufus Pottinger m Green yeast and mold, Wallerstein Nutrient, Wort
Milk	E. coli and coliforms	Endo
	Enterococci, Enterococcus faecalis	Azide KF Strep
	Salmonellae	Bismuth Sulfite
Pharmaceuticals, WFI, raw materials and cosmetics	Enterobacteria, E. coli	MacConkey
	Enterococci, Enterococcus faecalis	Azide KF Strep
	Pseudomonas aeruginosa	Cetrimide
	Salmonellae	Bismuth Sulfite
	Staphylococci, Staphylococcus aureus	Chapman
	Total colony count	Caso, R2A
	Yeasts and molds, Candida albicans	Sabouraud
Soft drinks, concentrates	Acid-tolerant microorganisms, Lactic-acid bacteria	Orange Serum, VLB-S-7-S, Wallerstein Differential
	Enterobacteria, E. coli and coliforms	Endo, MacConkey
	Mesophilic slime-forming bacteria, Leuconostoc	Weman
	Total colony count	Standard*, Standard TTC*, TGE Tryptone Glucose Extract, Total Count TTC
	Yeasts and molds	Malt Extract, Schaufus Pottinger m Green yeast and mold, m Green selective, Wallerstein Nutrient, Wort
Sugar, sugar products	E. coli and coliforms	Endo
	Mesophilic slime-forming bacteria, Leuconostoc	Weman
	Thermophilic spore formers and mesophilic bacteria	Glucose Tryptone
	Total colony count	Total Count TTC
	Yeasts and molds	Malt Extract*, Schaufus Pottinger m Green yeast and mold, m Green selective, Wort*
Water (general quality), mineral water, natural water, waste water	Acid-tolerant microorganisms, Lactic-acid bacteria	Orange Serum
	Enterobacteria, E. coli and coliforms	Chromocult, ECD, Endo, (MacConkey), m FC, Teepol Lauryl Sulphate, Tergitol TTC
	Enterococci, Enterococcus faecalis	Azide KF Strep
	Pseudomonas aeruginosa	Cetrimide
	Salmonellae	Bismuth Sulfite
	Staphylococci, Staphylococcus aureus	Chapman
	Total colony count	Caso, R2A, Standard, Standard TTC, TGE Tryptone Glucose Extract, Yeast Extract
	Yeasts and molds, Candida albicans	Sabouraud
Wine	Acetobacter	Orange Serum, Wort (both wetted with 5-8% ethanol)
	Acid-tolerant microorganisms, Lactic-acid bacteria	Orange Serum, Wallerstein Differential
	Oenococcus and other wine spoiling microorgan.	Jus de Tomate Tomato Juice
	Yeasts and molds	Malt Extract, Schaufus Pottinger m Green yeast and mold, Wallerstein Nutrient, Wort

* These media types are suitable for the determination of the mentioned microorganisms, although the media are not explicit declared in the references described in this publication.

Reference Guide

Abbreviation	Title
AFNOR	Association Française de Normalisation
APHA (dairy)	American Public Health Association: Standard Methods for the examination of dairy products
APHA (food)	American Public Health Association: Compendium of methods for the microbiological examination of foods
APHA (water)	American Public Health Association, American Water Works Association (AWWA) and Water Environment Federation (WEF): Standard Methods for the Examination of Water and Waste Water
AOAC	Association of Official Analytical Chemists
API	American Petroleum Institute: Recommended practice for biological Analysis of Subsurface Injection waters
ASM	American Society for Microbiology
BS	British Standards
DAB	Deutsches Arzneimittelbuch (German Pharmacopoeia, replaced by EP)
DIN 10110	Deutsches Institut für Normung: Mikrobiologische Fleischuntersuchung. Bestimmung der E. coli. (Microbial detection of E. coli on meat)
DIN 38411	Deutsches Institut für Normung: Deutsche Einheitsverfahren zur Wasser-, Abwasser- und Schlammuntersuchung (German standard for water, waste water and sludge analysis)
DGHM	Deutsche Gesellschaft für Hygiene und Mikrobiologie (German Association of Hygiene and Microbiology)
EBC	European Brewery Convention
EG 98/83	European Guideline 98/83: Water Quality for human purpose
EN 12780	International Organization for Standardization: Water Quality – Detection and enumeration of Ps. aeruginosa
EP	European Pharmacopoeia
EPA	U.S. Environmental Protection Agency: Laboratory standards for equipment and materials
FDA	U.S. Federal Drug Administration
HMSO	Her Majesty's Stationery Office: Department of Health and Social Security (1982) "The Bacteriological Examination of Drinking Water Supplies". Report 71, HMSO, London
ICUMSA	International Commission for Uniform Methods of Sugar Analysis
IDF	International Dairy Federation
IFU	International Federation of Fruit Juice Producers
Internal SOP	Internal Standard Operation Procedure of individual requests
ISO 6222	International Organization for Standardization: Water Quality – Enumeration of culturable micro-organisms
ISO 6579-1981	International Organization for Standardization: Microbiology. General guidance on methods for the detection of Salmonella. Reference method
ISO 7704	International Organization for Standardization: Water Quality, Evaluation of membrane filters used for microbiological analysis
ISO 7899-2	International Organization for Standardization: Water Quality – Detection and enumeration of intestinal enterococci
ISO 8199	International Organization for Standardization: Water Quality – General Guide to the enumeration of micro-organisms by culture
ISO 9308-1	International Organization for Standardization: Water Quality – Detection and enumeration of E. coli and coliform bacteria
JFoodP	Journal of Food Protection
JIBrew	The Journal of the Institute of Brewing
LLL	Method described by Lanaridris& Lafon-Lafourcade
LMBG	Amtliche Sammlung von Untersuchungsverfahren nach dem §35 des Lebensmittel- und Bedarfsgegenständegesetzes des BGA (testing procedures for food stuffs and articles of daily use)
MEBAK	Methodensammlung der Mitteleuropäischen Brauereitechnischen Analysenkommission (methods of the Central European brewery commission)
MNO	Verordnung über natürliches Mineralwasser, Quellwasser und Tafelwasser (Mineral/Table Water Guideline)
MPP	Merkblätter für die Prüfung von PackmittelIn (Testing procedures for packaging stuff)
NCA	National Canners Association: A Laboratory manual of the canning industry
USDA	U.S. Department of Agriculture
USP	United States Pharmacopoeia
VLB	Versuchs- und Lehranstalt für Brauerei in Berlin (institute of brewery)
ZenHyg	Zentralblatt für Hygiene (Journal of Hygiene)

DIN standards and the "Amtliche Sammlung von Untersuchungsverfahren nach dem §35 des Lebensmittel- und Bedarfsgegenständegesetzes des BGA" are available through the German publisher Beuth-Verlag, Burggrafenstr. 6, 10787 Berlin, Germany.

Combisart® Individual Systems

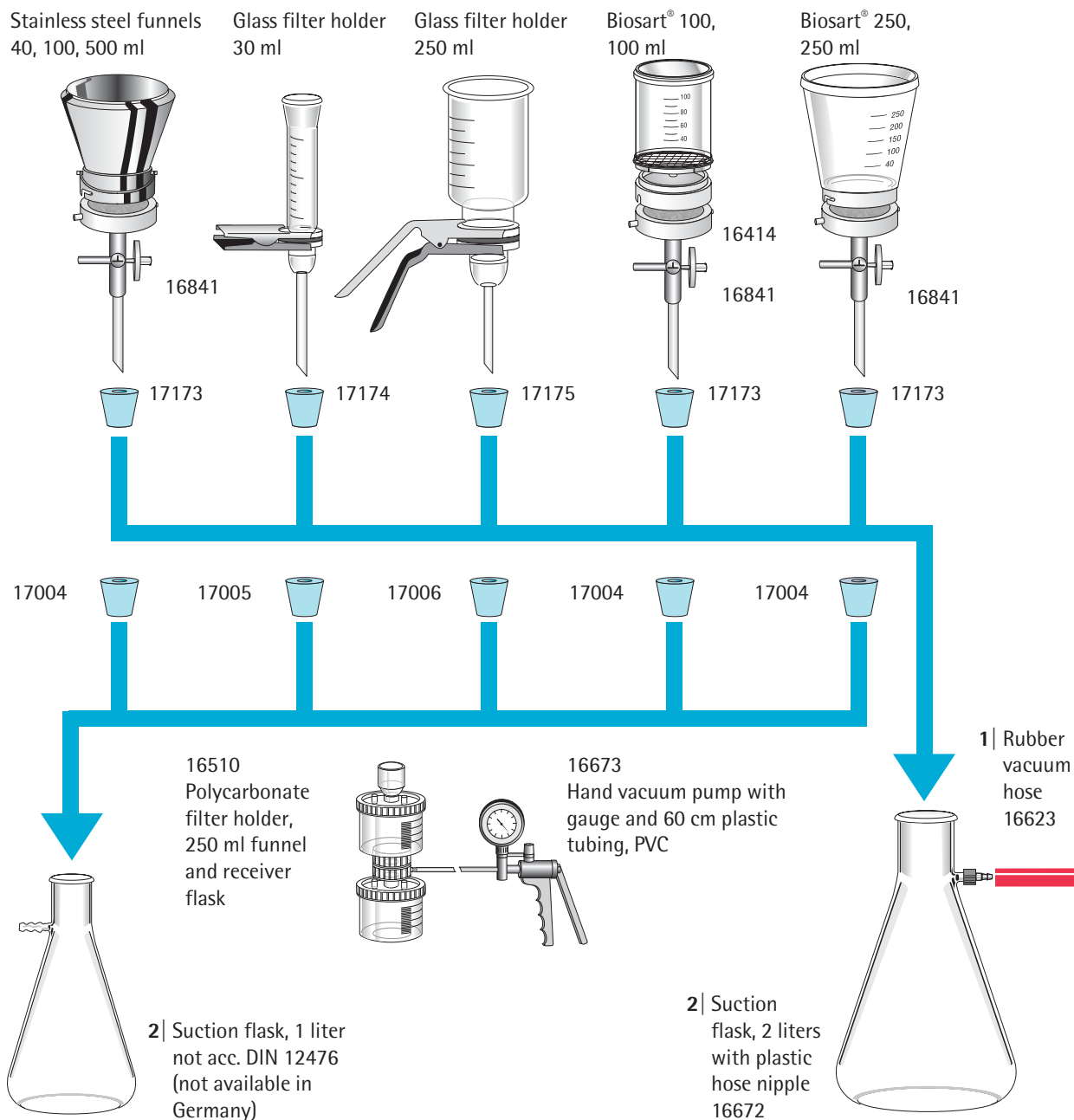
If you have a low number of samples to test, we recommend that you use our individual systems. In this equipment set-up, you simply use a silicone stopper to fit your choice of glass funnel (described on the previous pages) on a suction flask.

To use all other types funnels with a suction flask, Sartorius has specially developed the individual base, 16841. The stainless steel frit and silicone gasket are supplied with the individual base.

Combisart® Sets for individual systems, stainless steel

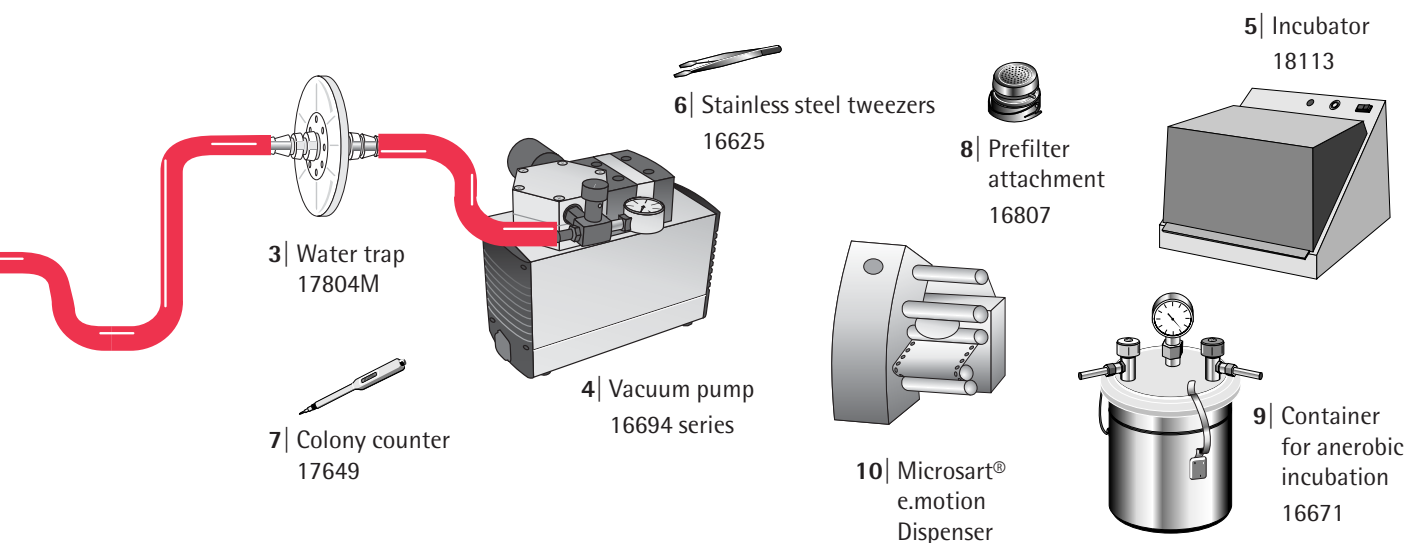
Order no.:	Base	Stainless steel funnels
16219-CS	1-base	1x100 ml
16201-CS	1-base	1x500 ml

In each set the funnels with lids are preassembled, ready to use on the single base.



Accessories

Description	Pack size	Order numbers
1 Rubber vacuum hose for connecting system components	1 m	16623
2 Suction flasks , for collecting the filtrate, vacuum-resistant borosilicate glass, 3.3 Suction flask, 5 liters, to DIN 12476, incl. stopper and glass tube	1	16672-1
Suction flask, 2 liters, to DIN 12476, without stopper	1	16672
Stopper for 2-liter suction flask	1	17173
Tube connector for connecting a Combisart® stainless steel manifold	1	17204
Suction flask, 1 liter (not available in Germany)	1	16606
3 Water traps , for preventing overflow of filtrate into a vacuum pump Vacusart, ready-to-connect filtration unit with a water-repellent, but air-permeable PTFE membrane	3	17804-----M
Woulff's bottle, 500 ml, with stop cock	1	16610
4 Vacuum pumps , neoprene membrane pumps with low noise level, oil- and maintenance-free; reliable sources of vacuum, 100 mbar final vacuum Microsart® maxi.vac for multiple filtration runs, 230 V, 50 HZ	1	16694-2-50-22
Microsart® maxi.vac for multiple filtration runs, 115 V, 60 HZ	1	16694-1-60-22
Microsart® mini.vac for single filtration runs, 230 V, 50 HZ	1	16694-2-50-06
Microsart® mini.vac for single filtration runs, 115 V, 60 HZ	1	16694-1-60-06
Microsart® e.jet Fluid Pump, 3.5 l/min.: Easy-to-assemble without suction flask (2) and water trap (3)	1	166MP-3
5 Incubator , temperature range 20–50°C, 15 l capacity; designed to hold the following numbers and sizes of petri dishes: 200 × 47 mm, or 160 × 56 60 mm or 72 × 90 mm.Dimensions (W H D) 340 270 431 mm	1	18113
6 Stainless steel tweezers with blunt-edged tips for protection of the membrane filter, can be flamed and autoclaved	1	16625
7 Colony counter , handy, battery-operated	1	17649
8 Stainless steel prefilter attachment for removal of coarse particulate substances from samples. Bacteriological prefilters for the 16807 prefilter attachment, cellulose nitrate, pore size 8 µm, sterile and individually packaged, diameter 50 mm	1	16807
	100	11301--47----ACN
9 Container for anaerobic incubation , stainless steel, for holding up to 14 × 60 mm or 6 × 90 mm petri dishes; DN 6 (approx. 6 mm) hose nipple on the inlet and outlet, with two taps and a vacuum gauge	1	16671
10 Microsart® e.motion Dispenser , the membrane filters are released from their sterile packaging fully automatically at the touch of a button or hands-free – a dispensing operation is triggered when the optical sensor detects approaching tweezers	1	16712



Additional Product Information



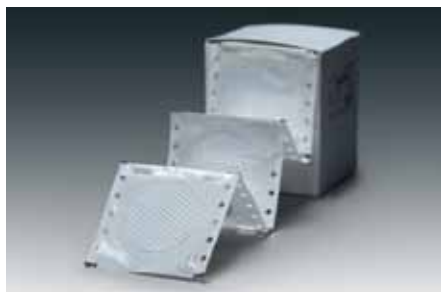
Microsart® e.motion Dispenser – membrane filters on demand.

The completely new membrane filter dispenser meets all requirements placed on advanced laboratory equipment. The membrane filters are released from their sterile packaging fully automatically at the touch of a button or hands-free – a dispensing operation is triggered when the optical sensor detects approaching tweezers.

- Fully automated membrane filter dispenser
- Works hands-free by an optical sensor
- Works by touch button
- Compact design
- Rapid and reliable transport due to sprocket feed roll technology
- Easy insertion of the filter band
- Easy-to-clean
- Low weight

Order No.

16712 (not available in the U.S. and Canada)



Microsart® e.motion Membrane Filters.

The cellulose nitrate (cellulose ester) membranes suitable for use in dispensers are sterile-sealed, without protective paper on top of each filter, in a specially designed individual package on a band. The special pleating of the band of membrane filter units ensures that they are perfectly flat when dispensed. The shape of the sealed band guarantees uniform dispensing of the individual 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, 25 kGray



Sampling of airborne microorganisms and viruses.

Together with Gelatin Membrane Filters, the MD8 airscan® Air Sampling System is ideal for detection of airborne microorganisms and viruses in conventionally ventilated rooms, in clean rooms with or without laminar flow, air-conditioning systems and in isolators. The MD8 airscan® delivers precise and validatable results.

The advantages of the MD8 airscan® used together with the Gelatin Membrane Filter method are as follows:

- "Absolute", reliable recovery of microorganisms
- The filter maintains the viability of collected microorganisms for a relevant and meaningful sampling time
- One CFU can be detected in one m³ of air
- Isokinetic sampling
- The MD8 airscan® can be calibrated on-site
- Suitable for use in class A|B cleanrooms, isolators and BFS machines

Sterility testing.

Pharmaceutical products, such as parenterals, ophthalmic preparations, veterinary and other products, that come in contact with the blood stream or otherwise enter the body below the skin surface, must be sterile. Sterilization procedures and measures designed to maintain sterility are therefore essential technological process steps. The manufacturer is responsible for demonstrating and verifying the safety and sterility of these individual steps. The current worldwide pharmacopoeias require proof of the sterility of pharmaceuticals as a condition for the release of a production lot. Sterility testing with Sterisart® NF units using the membrane filtration method has advantages over the direct method of incubation:

- It allows growth inhibitors to be flushed out
- Low CFU counts can be detected in large sample volumes

Microsart® e.motion membrane filters, individually, sterile packaged, 47 mm, 3×100 filters per box, without protective paper

Order No.	Color Grid	Pore Size
11407Z-47----SCM	white black	0.2 µm
114H6Z-47----SCM	white black	0.45 µm High Flow
11406Z-47----SCM	white black	0.45 µm
139H6Z-47----SCM	white green	0.45 µm High Flow
13906Z-47----SCM	white green	0.45 µm
13806Z-47----SCM	green dark green	0.45 µm
13006Z-47----SCM	gray white	0.45 µm
130H6Z-50----SCM	gray white	0.45 µm High Flow
13005Z-47----SCM	gray white	0.65 µm
13004Z-47----SCM	gray white	0.8 µm

Order no. for 50 mm membrane filters as above, but -47----SCM replaced by -50----SCM. Other types on request.

Please contact your local Sartorius office or representative for more information.

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