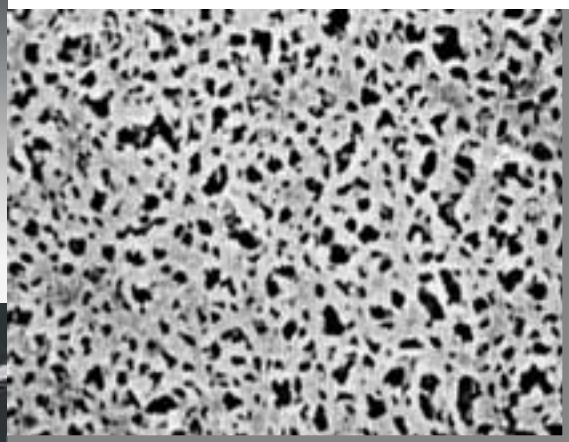
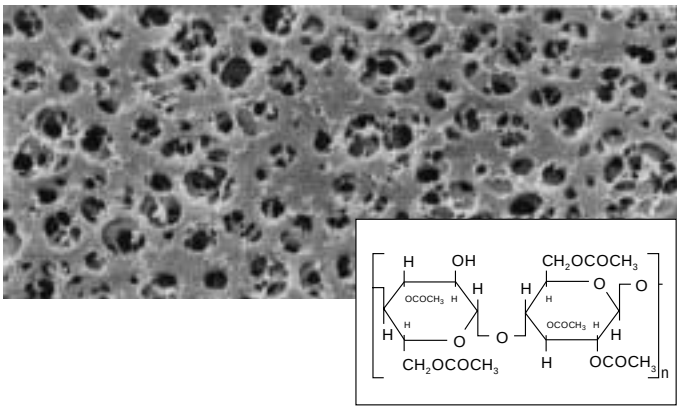
sartorius



Sartorius Microfilters
Product Overview

Contents



Material
Cellulose acetate

Structure
Symmetrical membrane

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
White

Typical Applications
Microbe-retentive, particle-removing filtration of nutrient media, water and solutions containing antibiotics or proteins

Special Features
- Very low non-specific adsorption
- Excellent thermal resistance

Technical Advantages
- Minimum loss of proteins, preservatives, etc.
- Autoclavable at 121°C or 134°C, dry-heat sterilization possible

Typical Performance

Thickness (acc. DIN 53105)
Approx. 120 µm

Flow rate for water per cm² (acc. DIN 58355)
69 ml/min
at Δp = 1bar | ~15 psi

Bubble point (acc. DIN 58355)
min 1.9 bar | ~27 psi

Extractables < 1%

Non-specific adsorption
Bovine serum albumin,
< 5 µg/cm²

Thermal resistance 180°C max.

Burst pressure
> 0.3 bar | ~4.35 psi

Test according to USP Standards

Biological testing (Class VI plastics) Passed

Extractables
Passed test after standard flushing

Particle release Passed

Absence of pyrogens (endotoxin content) Passed

Sterilization Methods
Autoclaving at 121°C or 134°C, dry-heat sterilization at 160°C or 180°C, ETO sterilization, γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4 – 8), oils, alcohols and several other organic solvents

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
Benzene	■
Benzyl alcohol	□
n-Butanol	■
n-Butyl acetate	□
Carbon tetrachloride	□
Cellosolve	■
Chloroform	–
Cyclohexane	□
Cyclohexanone	–
Diethyl acetamide	–
Diethyl ether	■
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 98%	■
Ethyl acetate	–
Ethylene glycol	■
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	□
Isopropanol	■
Isopropyl acetate	□
Methanol, 98%	■
Methyl acetate	–
Methylene chloride	–
Methyl ethyl ketone	–
Methyl isobutyl ketone	nt
Monochlorobenzene	■
Nitrobenzene	■
n-Pentane	■
Perchloroethylene	■
Pyridine	–
Tetrahydrofuran	–
Toluene	■
Trichloroethane	□
Trichloroethylene	■
Xylene	■

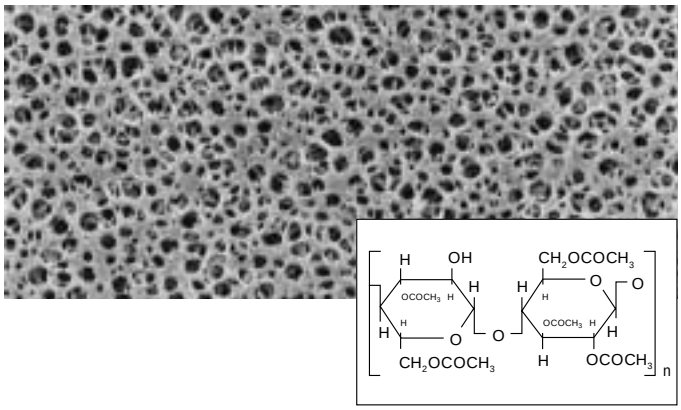
Acids	
Acetic acid, 25%	■
Acetic acid, 96%	–
Hydrochloric acid, 25%	–
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	■
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	–
Phosphoric acid, 25%	■
Phosphoric acid, 85%	□
Nitric acid, 25%	–
Nitric acid, 65%	–
Sulfuric acid, 25%	–
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	–

Bases	
Ammonium hydroxide, 1 N	■
Ammonium hydroxide, 25%	□
Potassium hydroxide, 32%	–
Sodium hydroxide, 32%	–
Sodium hydroxide, 1 N	□

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	■
Ferric chloride, 25%	■
Formalin, 30%	□
Hydrogen peroxide	■
Sodium hypochlorite, 5%	■

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested



Material
Cellulose acetate

Structure
Symmetrical membrane

Pore size
0.2 µm

Reaction to water
Hydrophilic

Color
White

Typical Applications
Sterile filtration of water, culture media, solutions containing antibiotics or proteins, cell harvesting

Special Features
- Very low non-specific adsorption
- Excellent thermal resistance
- Validated using Brevundimonas diminuta

Technical Advantages
- Minimum loss of proteins, preservatives, etc.
- Autoclavable at 121°C or 134°C, dry-heat sterilization possible
- Reliable sterile filtration

Typical Performance

Thickness (acc. DIN 53105)
Approx. 120 µm

Flow rate for water per cm² (acc. DIN 58355)
24 ml/min at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355)
3.3 bar | ~48 psi

Extractables <1%

Non-specific adsorption
Bovine serum albumin
<10 µg/cm²

Thermal resistance 180°C max.

Burst pressure
0.3 bar | ~4.35 psi

Test according to USP Standards

Biological testing (Plastic Class VI) Passed

Extractables
Passed test after standard flushing

Particle release Passed

Absence of pyrogens (endotoxin content) Passed

Sterilization Methods
Autoclaving at 121°C or 134°C
Dry-heat sterilization at 160°C or 180°C, ETO sterilization,
γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4 – 8), oils, alcohols and several other organic solvents

Retentive Capacity
100% retention of Brevundimonas diminuta, ATCC 19146 test organisms (10^7/cm² filter area)

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
Benzene	■
Benzyl alcohol	□
n-Butanol	■
n-Butyl acetate	□
Carbon tetrachloride	□
Cellosolve	■
Chloroform	–
Cyclohexane	□
Cyclohexanone	–
Diethyl acetamide	–
Diethyl ether	■
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 98%	■
Ethyl acetate	–
Ethylene glycol	■
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	□
Isopropanol	■
Isopropyl acetate	□
Methanol, 98%	■
Methyl acetate	–
Methylene chloride	–
Methyl ethyl ketone	–
Methyl isobutyl ketone	nt
Monochlorobenzene	■
Nitrobenzene	■
n-Pentane	■
Perchloroethylene	■
Pyridine	–
Tetrahydrofuran	–
Toluene	■
Trichlororthane	□
Trichloroethylene	■
Xylene	■

Acids	
Acetic acid, 25%	■
Acetic acid, 96%	–
Hydrochloric acid, 25%	–
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	■
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	–
Phosphoric acid, 25%	■
Phosphoric acid, 85%	□
Nitric acid, 25%	–
Nitric acid, 65%	–
Sulfuric acid, 25%	–
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	–

Bases	
Ammonium hydroxide, 1 N	■
Ammonium hydroxide, 25%	□
Potassium hydroxide, 32%	–
Sodium hydroxide, 32%	–
Sodium hydroxide, 1 N	□

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	■
Ferric chloride, 25%	■
Formalin, 30%	□
Hydrogen peroxide	■
Sodium hypochlorite, 5%	■

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
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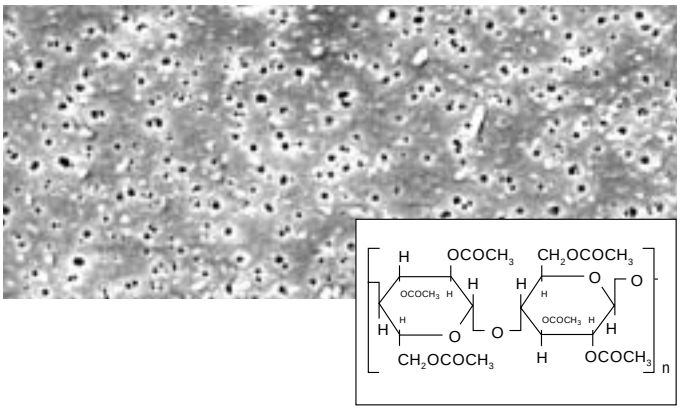
nt = not tested



Material
Cellulose triacetate

Structure
Asymmetrical membrane
non backed

Nominal molecular weight cut-off
20,000 daltons

Reaction to water
impregnated with glycerol

Color
White (shiny side = active layer in filtration)

Typical Applications
Concentration of proteins, depyrogenizing, desalting

Special Features
- Very low non-specific adsorption
- The manufacturing process is based on many years of experience in the production of ultrafilters for medicinal use

Technical Advantages
- Minimum loss of proteins
- Consistently excellent in quality

Typical Performance

Thickness (acc. DIN 53105)
Approx. 110 µm

Flow rate for water per cm² (acc. DIN 58355)
0.2 ml/min at Δp = 1 bar | ~15 psi

Thermal resistance
50°C max.

Sterilization Methods
Chemical sterilization by immersion in a 3% formalin solution, 5% hydrogen peroxide or 1% peracetic acid for 24 hours;
ETO sterilization;
γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4–8), alcohols and several other organic solvents

Recovery Rates
98% for albumin
(MWCO, approx. 67,000 daltons)

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
n-Amyl alcohol	■
Benzene	□[1]
Benzyl alcohol	–
n-Butanol	■
Chloroform	–
Cyclohexanone	–
Carbon tetrachloride	□[4]
Decalin	□[2]
Diethyl ether	■
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 70%	■
Ethanol, 98%	■
Ethyl acetate	–
Ethylene glycol	■
Formamide	nt
Glycerol	■
n-Hexan	□[2]
Isobutanol	nt
Isopropanol	■
Isopropyl acetate	nt
Isopropyl myristate	–
Methanol, 98%	■[2]
Methyl acetate	–
Methyl ethyl ketone	–
Methyl isobutyl ketone	–
Methylen chloride	–
Monochlorobenzene	□[3]
Perchlorethylene	■
n-Propanol	■
Pyridine	nt
Tetrahydrofuran	–
Tetralin	□[2]
Toluene	□[1]
Trichloroethylene	□[3]
Xylene	□[1]

Acids	
Acetic acid, 25%	□[2]
Acetic acid, 96%	–
Formic acid, 25%	□[2]
Formic acid, con.	–
Hydrochloric acid, 25%	–
Hydrochloric acid, 30%	–
Nitric acid, 65%	–
Phosphoric acid, 25%	□
Sulfuric acid, 25%	–
Sulfuric acid, 98%	–
Trichloroacetic acid, 20%	■
Trichloroacetic acid, 25%	–

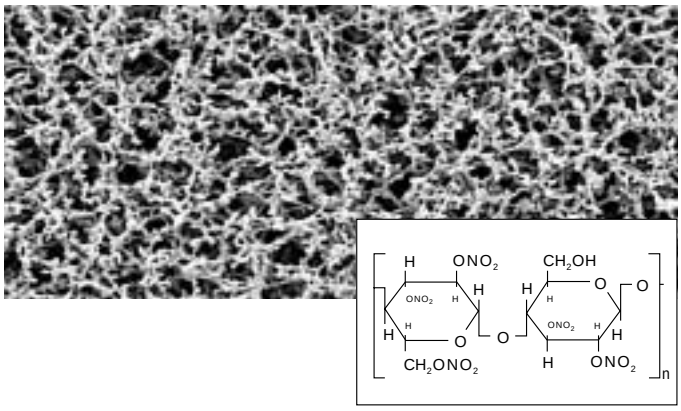
Bases	
Ammonium hydroxide, 25%	–
Ammonium hydroxide, 1 N	□[1]
Potassium hydroxide, 1 N	–
Sodium hydroxide, 1 N	–

Aqueous solutions	
Formaldehyde, 30%	■
Hydrogen peroxide, 30%	■
Phenol, watery, 10%	–

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested

[1] = compatible, if contact is < 24 hrs.
[2] = flow rate is reduced
[3] = flow rate is reduced, filter becomes transparent
[4] = transparent filter



Material
Cellulose nitrate
(Ester)

Structure
Symmetrical

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
White

Typical Applications
Residue analysis, hybridity testing, liquid scintillation, ultracleaning of aqueous solutions

Special Features
- Fine, uniform pore structure and high, non-specific adsorption

Technical Advantages
- Effective removal of small particles on the filter surface
- Excellent for the filtration of water samples and for phosphate determination

Typical Performance

Thickness (acc. DIN 53105)
Approx. 130 µm

Flow rate for water per cm² (acc. DIN 58355)
69 ml/min at Δp = 1 bar | ~15 psi

Flow rate for air per cm²
Approx. 0.4 ml/min
at Δp = 0.05 bar | 1 psi

Bubble point (acc. DIN 58355)
min 2.4 bar | ~35 psi

Extractables
<1%

Non-specific adsorption
γ globulin, approx. 125 µg/cm²

Thermal resistance
130°C max.

Burst pressure
>0.2 bar | ~2.9 psi

Test according to USP Standards

Biological testing Passed

Extractables
Passed test after standard flushing

Particle release Passed

Absence of pyrogens (endotoxin content) Passed

Sterilization Methods
Autoclaving at 121°C,
ETO sterilization,
γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4 – 8), hydrocarbons and several other organic solvents

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
Benzene	■
Benzyl alcohol	□
n-Butanol	■
n-Butyl acetate	–
Carbon tetrachloride	■
Cellosolve	–
Chloroform	■
Cyclohexane	□
Cyclohexanone	–
Diethyl acetamide	–
Diethyl ether	–
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 98%	□
Ethyl acetate	–
Ethylene glycol	□
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	□
Isopropanol	□
Isopropyl acetate	–
Methanol, 98%	–
Methyl acetate	–
Methylene chloride	□
Methyl ethyl ketone	–
Methyl isobutyl ketone	–
Monochlorobenzene	■
Nitrobenzene	□
n-Pentane	■
Perchloroethylene	■
Pyridine	–
Tetrahydrofuran	–
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

Acids	
Acetic acid, 25%	■
Acetic acid, 96%	–
Hydrochloric acid, 25%	□
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	□
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	□
Phosphoric acid, 25%	□
Phosphoric acid, 85%	□
Nitric acid, 25%	□
Nitric acid, 65%	–
Sulfuric acid, 25%	□
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	□

Bases	
Ammonium hydroxide,1 N	■
Ammonium hydroxide, 25%	–
Potassium hydroxide, 32%	–
Sodium hydroxide, 32%	–
Sodium hydroxide, 1 N	–

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	nt
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	□

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

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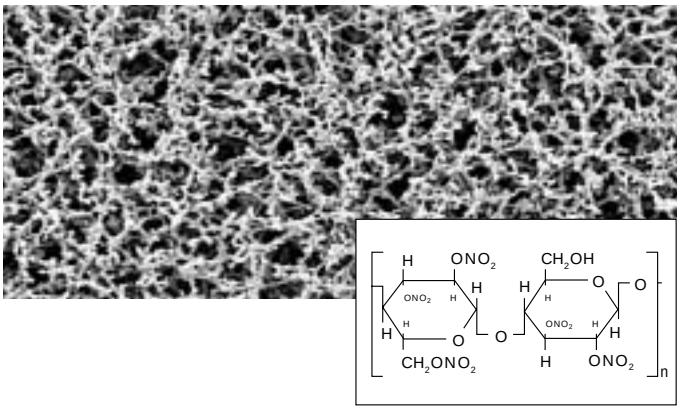


Material
Cellulose nitrate
(Ester)

Structure
Symmetrical

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
White with a black grid

Typical Applications
Microscopic particulate analysis

Special Features
- Imprinted black grid (edge length 3.1mm)
- White surface
- Grid does not influence growth
- Individual sterile packages available

Technical Advantages
- Simplifies adjustment of the microscope and localization of the particles retained
- Excellent contrast to the dark particles

Typical Performance

Thickness (acc. DIN 53105)
Approx. 130 µm

Bubble point (acc. DIN 58355)
2.4 bar | ~35 psi

Flow rate for water per cm² (acc. DIN 58355)
69 ml/min
at Δp = 1 bar | ~15 psi

Extractables
<1%

Non-specific adsorption
γ globulin, approx. 125 µg/cm²

Thermal resistance
130°C max.

Burst pressure
>0.2 bar | ~2.9 psi

Sterilization Methods
Autoclaving at 121°C,
ETO sterilization,
γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4 – 8), hydrocarbons and several other organic solvents

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
Benzene	■
Benzyl alcohol	□
n-Butanol	■
n-Butyl acetate	–
Carbon tetrachloride	■
Cellosolve	–
Chloroform	■
Cyclohexane	□
Cyclohexanone	–
Diethyl acetamide	–
Diethyl ether	–
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 98%	□
Ethyl acetate	–
Ethylene glycol	□
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	□
Isopropanol	□
Isopropyl acetate	–
Methanol, 98%	–
Methyl acetate	–
Methylene chloride	□
Methyl ethyl ketone	–
Methyl isobutyl ketone	–
Monochlorobenzene	■
Nitrobenzene	□
n-Pentane	■
Perchloroethylene	■
Pyridine	–
Tetrahydrofuran	–
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

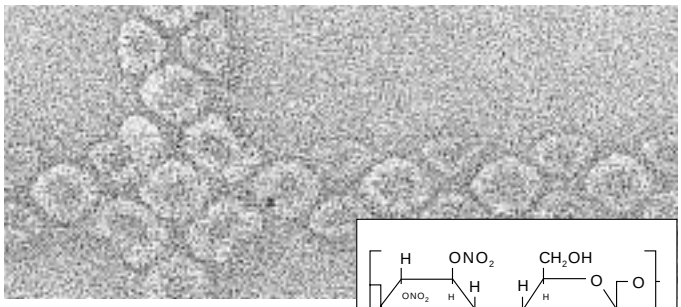
Acids	
Acetic acid, 25%	■
Acetic acid, 96%	–
Hydrochloric acid, 25%	□
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	□
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	□
Phosphoric acid, 25%	□
Phosphoric acid, 85%	□
Nitric acid, 25%	□
Nitric acid, 65%	–
Sulfuric acid, 25%	□
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	□

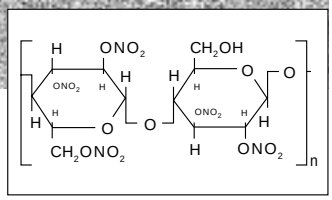
Bases	
Ammonium hydroxide,1 N	■
Ammonium hydroxide, 25%	–
Potassium hydroxide, 32%	–
Sodium hydroxide, 32%	–
Sodium hydroxide, 1 N	–

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	nt
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	□

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested





Material
Cellulose nitrate
(Ester)

Structure
Symmetrical

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
Grey with white grid;
black after wetting

Typical Applications
Used to detect yeasts and molds.
Particulate testing

Special Features
- Grid does not influence growth
- Individual sterile packages available
- Standardized for micro-biological tests
- Black dye provides optimal contrast to yeasts, molds and lighter-colored particles

Technical Advantages
- Optimal colony growth
- Easy-to-use
- Excellent recovery rate
- Simplifies colony counting and particulate analysis under the microscope

Typical Performance

Thickness (acc. DIN 53105)
Approx. 130 µm

Flow rate for water per cm² (acc. DIN 58355)
69 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355)
2.4 bar | ~35 psi

Extractables
<1%

Thermal resistance
130°C max.

Sterilization Methods
Autoclaving at 121°C,
ETO sterilization,
γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4–8), hydrocarbons and several other organic solvents

Recovery Rate
Colony count of 90% is at least as high as the colony count obtained from an agar plate using the pour-plate method

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
Benzene	■
Benzyl alcohol	□
n-Butanol	■
n-Butyl acetate	–
Carbon tetrachloride	■
Cellosolve	–
Chloroform	■
Cyclohexane	□
Cyclohexanone	–
Diethyl acetamide	–
Diethyl ether	–
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 98%	□
Ethyl acetate	–
Ethylene glycol	□
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	□
Isopropanol	□
Isopropyl acetate	–
Methanol, 98%	–
Methyl acetate	–
Methylene chloride	□
Methyl ethyl ketone	–
Methyl isobutyl ketone	–
Monochlorobenzene	■
Nitrobenzene	□
n-Pentane	■
Perchloroethylene	■
Pyridine	–
Tetrahydrofuran	–
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

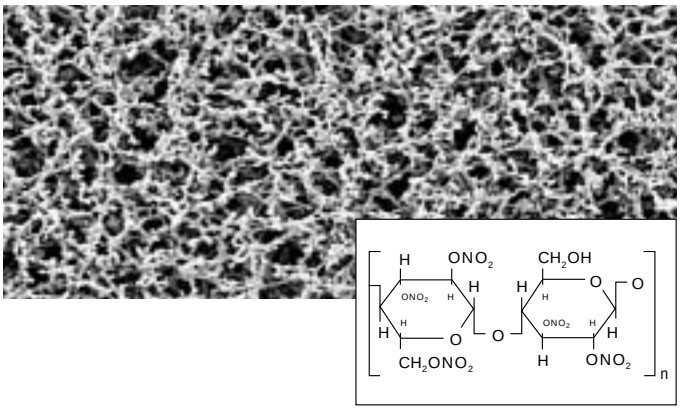
Acids	
Acetic acid, 25%	■
Acetic acid, 96%	–
Hydrochloric acid, 25%	□
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	□
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	□
Phosphoric acid, 25%	□
Phosphoric acid, 85%	□
Nitric acid, 25%	□
Nitric acid, 65%	–
Sulfuric acid, 25%	□
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	□

Bases	
Ammonium hydroxide,1 N	■
Ammonium hydroxide, 25%	–
Potassium hydroxide, 32%	–
Sodium hydroxide, 32%	–
Sodium hydroxide, 1 N	–

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	nt
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	□

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested



Material
Cellulose nitrate
(Ester)

Structure
Symmetrical

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
White with black grid and
pink hydrophobic edges

Typical Applications
Sterility testing of products containing inhibitors or antibiotics; gravimetric determination

Special Features
- No buildup of growth inhibitors on the hydrophobic edges
- No deposits of soluble substances such as sugar on the edges

Technical Advantages
- Normal growth conditions during sterility test
- Unbiased gravimetrical results

Typical Performance

Thickness (acc. DIN 53105)
Approx. 130 µm

Flow rate for water per cm² (acc. DIN 58355)
69 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355)
min 2.4 bar | ~35 psi

Thermal resistance
130°C max.

Sterilization Methods
Autoclaving at 121°C,
ETO sterilization,
γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4–8), hydrocarbons and several other organic solvents

Recovery Rate
Colony count of 90% (E. coli) is at least as high as the colony count obtain-ed from an agar plate using the pour-plate method

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
Benzene	■
Benzyl alcohol	□
n-Butanol	■
n-Butyl acetate	–
Carbon tetrachloride	■
Cellosolve	–
Chloroform	■
Cyclohexane	□
Cyclohexanone	–
Diethyl acetamide	–
Diethyl ether	–
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 98%	□
Ethyl acetate	–
Ethylene glycol	□
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	□
Isopropanol	□
Isopropyl acetate	–
Methanol, 98%	–
Methyl acetate	–
Methylene chloride	□
Methyl ethyl ketone	–
Methyl isobutyl ketone	–
Monochlorobenzene	■
Nitrobenzene	□
n-Pentane	■
Perchloroethylene	■
Pyridine	–
Tetrahydrofuran	–
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

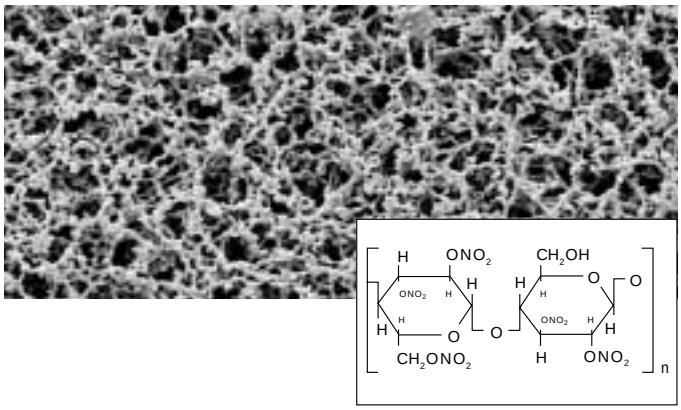
Acids	
Acetic acid, 25%	■
Acetic acid, 96%	–
Hydrochloric acid, 25%	□
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	□
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	□
Phosphoric acid, 25%	□
Phosphoric acid, 85%	□
Nitric acid, 25%	□
Nitric acid, 65%	–
Sulfuric acid, 25%	□
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	□

Bases	
Ammonium hydroxide,1 N	■
Ammonium hydroxide, 25%	–
Potassium hydroxide, 32%	–
Sodium hydroxide, 32%	–
Sodium hydroxide, 1 N	–

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	nt
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	□

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested



Material
Cellulose nitrate
(Ester)

Structure
Symmetrical

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
Green with dark-green grid

Typical Applications
CFU (colony count determination)

Special Features
- Grid does not influence growth
- Available individually packaged and presterilized
- Standardized for microbiological tests
- Green dye provides optimal contrast to light or translucent bacteria colonies

Technical Advantages
- Optimal colony growth
- Easy-to-use
- Excellent recovery rate
- Simplifies colony count

Typical Performance

Thickness (acc. DIN 53105)
Approx. 130 µm

Flow rate for water per cm² (acc. DIN 58355)
69 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355)
min 2.4 bar | ~35 psi

Extractables
<1%

Thermal resistance
130°C max.

Sterilization Methods
Autoclaving at 121°C,
ETO sterilization,
γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4–8), hydrocarbons and several other organic solvents

Recovery Rate
Colony count of 90% is at least as high as the colony count obtained from an agar plate using the pour-plate method

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
Benzene	■
Benzyl alcohol	□
n-Butanol	■
n-Butyl acetate	–
Carbon tetrachloride	■
Cellosolve	–
Chloroform	■
Cyclohexane	□
Cyclohexanone	–
Diethyl acetamide	–
Diethyl ether	–
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 98%	□
Ethyl acetate	–
Ethylene glycol	□
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	□
Isopropanol	□
Isopropyl acetate	–
Methanol, 98%	–
Methyl acetate	–
Methylene chloride	□
Methyl ethyl ketone	–
Methyl isobutyl ketone	–
Monochlorobenzene	■
Nitrobenzene	□
n-Pentane	■
Perchloroethylene	■
Pyridine	–
Tetrahydrofuran	–
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

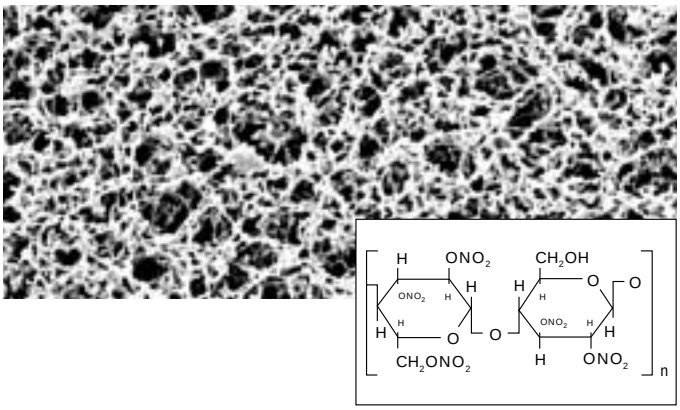
Acids	
Acetic acid, 25%	■
Acetic acid, 96%	–
Hydrochloric acid, 25%	□
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	□
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	□
Phosphoric acid, 25%	□
Phosphoric acid, 85%	□
Nitric acid, 25%	□
Nitric acid, 65%	–
Sulfuric acid, 25%	□
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	□

Bases	
Ammonium hydroxide,1 N	■
Ammonium hydroxide, 25%	–
Potassium hydroxide, 32%	–
Sodium hydroxide, 32%	–
Sodium hydroxide, 1 N	–

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	nt
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	□

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested



Material
Cellulose nitrate
(Ester)

Structure
Symmetrical

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
White with green grid

Typical Applications
Microbiological tests, detection of E. coli and other coliforms

Special Features
- Grid does not influence growth
- Available individually packaged and presterilized
- Standardized for microbiological tests Green dye provides optimal contrast to light or translucent bacterial colonies

Technical Advantages
- Optimal colony growth
- Easy-to-use
- Excellent recovery rate
- Simplifies colony count

Typical Performance

Thickness (acc. DIN 53105)
Approx. 130 µm

Flow rate for water per cm² (acc. DIN 58355)
69 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355)
min 2.4 bar | ~35 psi

Extractables
<1%

Thermal resistance
130°C max.

Sterilization Methods
Autoclaving at 121°C,
ETO sterilization,
γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 4–8), hydrocarbons and several other organic solvents

Recovery Rate
Colony count of 90% (E. coli and other coliforms) is at least as high as the colony count obtained from an agar plate using the pour-plate method

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	–
Benzene	■
Benzyl alcohol	□
n-Butanol	■
n-Butyl acetate	–
Carbon tetrachloride	■
Cellosolve	–
Chloroform	■
Cyclohexane	□
Cyclohexanone	–
Diethyl acetamide	–
Diethyl ether	–
Dimethylformamide	–
Dimethyl sulfoxide	–
Dioxane	–
Ethanol, 98%	□
Ethyl acetate	–
Ethylene glycol	□
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	□
Isopropanol	□
Isopropyl acetate	–
Methanol, 98%	–
Methyl acetate	–
Methylene chloride	□
Methyl ethyl ketone	–
Methyl isobutyl ketone	–
Monochlorobenzene	■
Nitrobenzene	□
n-Pentane	■
Perchloroethylene	■
Pyridine	–
Tetrahydrofuran	–
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

Acids	
Acetic acid, 25%	■
Acetic acid, 96%	–
Hydrochloric acid, 25%	□
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	□
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	□
Phosphoric acid, 25%	□
Phosphoric acid, 85%	□
Nitric acid, 25%	□
Nitric acid, 65%	–
Sulfuric acid, 25%	□
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	□

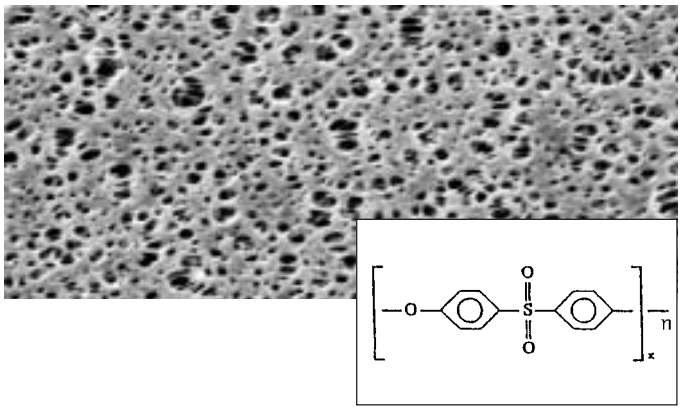
Bases	
Ammonium hydroxide,1 N	■
Ammonium hydroxide, 25%	–
Potassium hydroxide, 32%	–
Sodium hydroxide, 32%	–
Sodium hydroxide, 1 N	–

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	nt
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	□

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested

Polyethersulfone membrane filter, type 154, for the filtration of aqueous and aggressive solutions.



The new Polyethersulfone (PES) membrane filters have high internal porosity, thus performing at high flux and excellent throughput of aqueous solutions in the wide pH-range of 1–13..

Because of their low non-specific protein adsorption characteristics, the type 154 series are (recommended) for filtering biological and pharmaceutical solutions.

The low extractable level of the PES membranes make them suitable for environmental analysis.

Typical Performance

Non-specific adsorption
10 µg/cm² for IgG, 5 µm/cm² for BSA, 1.9 µg/cm² for insulin

Extractables with water
less than 0.2 %

Autoclavable
at 121°C or 134°C

Bubble point (acc. DIN 58355)
minimum value for
0.1 µm >2.1 ml/min | ~30 psi
(with Isopropanol/Water 60/40)
0.2 µm = 3.2 bar | ~46 psi
0.45 µm = 2.2 bar | ~33 psi

Chemical compatibility
resistant to aggressive. aqueous solutions, pH 1–13

Thickness average value (acc. DIN 53105)
150 µm

Flow rate for water
average value per cm² area at
ΔP = 1 bar (100 kPa):
0.1 µm – > 7 ml/min.
0.2 µm – >28 ml/min.
0.45 µm – >32 ml/min.

Material
Polyethersulfone (non ionic)

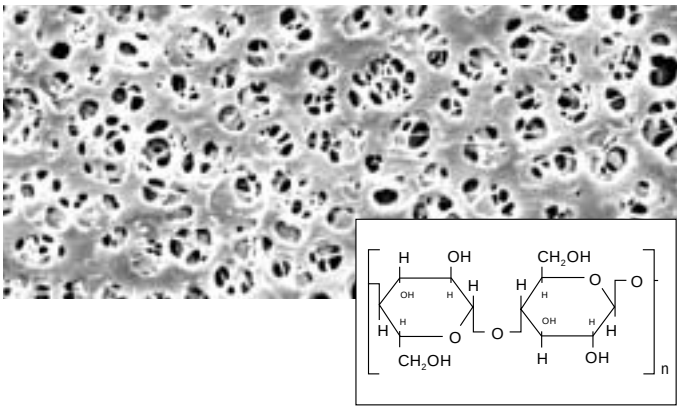
Sterile Filtration
filters with 0.2 µm pore sizes have been validated with the Bacteria Challenge Test

Sterilization Methods
by autoclaving, gamma radiation or with ethylenoxide

Order Numbers for Polyethersulfone, Type 154

25 mm diameter:	
15458-025N	0.1 µm (pack of 100)
15407-025MIN	0.2 µm (pack of 100)
15406-025N	0.45 µm (pack of 100)
47 mm diameter:	
15458-047N	0.1 µm (pack of 100)
15407-047MIN	0.2 µm (pack of 100)
15406-047N	0.45 µm (pack of 100)
50 mm diameter:	
15458-050N	0.1 µm (pack of 100)
15407-050MIN	0.2 µm (pack of 100)
15406-050N	0.45 µm (pack of 100)

Type 18406



Material
Regenerated cellulose, reinforced with nonwoven cellulose

Structure
Asymmetrically reinforced

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
White

Typical Applications
- Particle-removing and microbe-retentive filtration of organic solvents

Special Features
- Superior chemical compatibility
- Excellent thermal resistance

Technical Advantages
- Compatible with almost all solvents (see reverse)
- Autoclavable at up to 134°C

Typical Performance

Thickness (acc. DIN 53105)
160–200 µm

Flow rate for water per cm² (acc. DIN 58355)
>28 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355)
min 2.8 bar | ~40 psi

Extractables
< 1%

Non-specific adsorption
Bovine serum albumin,
< 10 µg/cm²

Thermal resistance
180°C max.

Sterilization Methods
Autoclave at up to 134°C (dry-heat sterilization recommended), dry heat at 180°C for 2 hrs., ETO sterilization, γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 3–12 at room temperature) and organic solvents

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	■
Benzene	■
Benzyl alcohol	■
n-Butanol	■
n-Butyl acetate	■
Carbon tetrachloride	■
Cellosolve	■
Chloroform	■
Cyclohexane	■
Cyclohexanone	■
Diethyl acetamide	■
Diethyl ether	■
Dimethylformamide	□
Dimethyl sulfoxide	■
Dioxane	■
Ethanol, 98%	■
Ethyl acetate	■
Ethylene glycol	■
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	■
Isopropanol	■
Isopropyl acetate	■
Methanol, 98%	■
Methyl acetate	■
Methylene chloride	■
Methyl ethyl ketone	■
Methyl isobutyl ketone	■
Monochlorobenzene	■
Nitrobenzene	■
n-Pentane	■
Perchloroethylene	■
Pyridine	■
Tetrahydrofuran	■
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

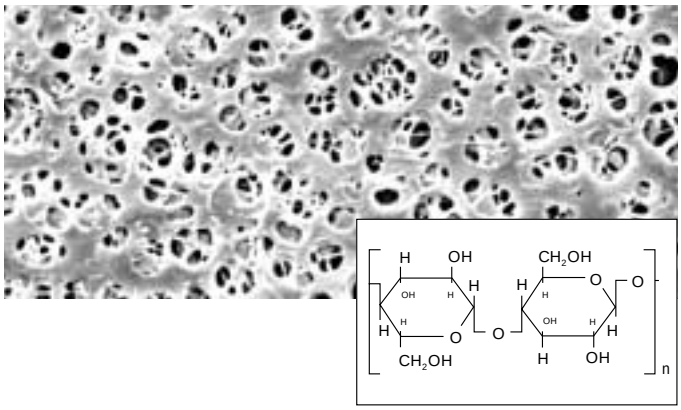
Acids	
Acetic acid, 25%	■
Acetic acid, 96%	■
Hydrochloric acid, 25%	–
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	□
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	□
Phosphoric acid, 25%	□
Phosphoric acid, 85%	□
Nitric acid, 25%	–
Nitric acid, 65%	–
Sulfuric acid, 25%	□
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	■

Bases	
Ammonium hydroxide,1 N	□
Ammonium hydroxide, 25%	□
Potassium hydroxide, 32%	□
Sodium hydroxide, 32%	□
Sodium hydroxide, 1 N	□

Aqueous solutions	
Ammonium fluoride, 20%	□
Ammonium persulfate	■
Ferric chloride, 25%	■
Formalin, 30%	□
Hydrogen peroxide	□
Sodium hypochlorite, 5%	■

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested



Material
Regenerated cellulose, reinforced with nonwoven cellulose

Structure
Asymmetrically reinforced

Pore size
0.2 µm

Reaction to water
Hydrophilic

Color
White

Typical Applications
Sterile filtration of organic solvents

Special Features
- Excellent chemical compatibility
- Superior thermal resistance

Technical Advantages
- Compatible with almost all solvents (see reverse)
- Autoclavable at up to 134°C

Typical Performance

Thickness (acc. DIN 53105)
Approx. 160–200 µm

Flow rate for water per cm² (acc. DIN 58355)
16 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355)
min 4.4 bar | ~64 psi

Extractables
<1% (water)

Non-specific adsorption
Bovine serum albumin, approx. 10 µg/cm²

Thermal resistance
180°C max.

Sterilization Methods
Autoclave at up to 134°C (dry-heat sterilization recommended), dry heat at 180°C for 2 hrs., ETO sterilization, γ irradiation (25 kGy)

Chemical Compatibility
Compatible with aqueous solutions (pH 3–12) at room temperature and organic solvents

Retentive Capacity
100% retention of Brevundimonas diminuta, ATCC 19146 test organisms (10^5/cm² filter area)

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	■
Benzene	■
Benzyl alcohol	■
n-Butanol	■
n-Butyl acetate	■
Carbon tetrachloride	■
Cellosolve	■
Chloroform	■
Cyclohexane	■
Cyclohexanone	■
Diethyl acetamide	■
Diethyl ether	■
Dimethylformamide	□
Dimethyl sulfoxide	■
Dioxane	■
Ethanol, 98%	■
Ethyl acetate	■
Ethylene glycol	■
Formamide	nt
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	■
Isopropanol	■
Isopropyl acetate	■
Methanol, 98%	■
Methyl acetate	■
Methylene chloride	■
Methyl ethyl ketone	■
Methyl isobutyl ketone	■
Monochlorobenzene	■
Nitrobenzene	■
n-Pentane	■
Perchloroethylene	■
Pyridine	■
Tetrahydrofuran	■
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

Acids	
Acetic acid, 25%	■
Acetic acid, 96%	■
Hydrochloric acid, 25%	–
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	□
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	□
Phosphoric acid, 25%	□
Phosphoric acid, 85%	□
Nitric acid, 25%	–
Nitric acid, 65%	–
Sulfuric acid, 25%	□
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	■

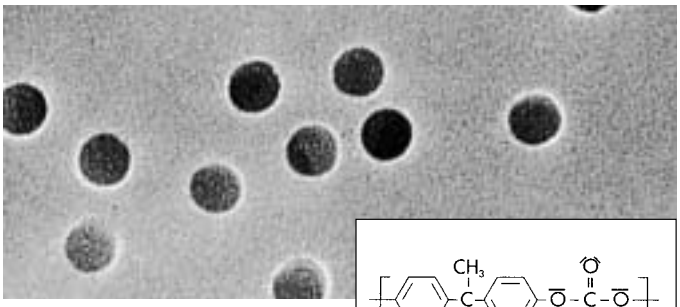
Bases	
Ammonium hydroxide,1 N	□
Ammonium hydroxide, 25%	□
Potassium hydroxide, 32%	□
Sodium hydroxide, 32%	□
Sodium hydroxide, 1 N	□

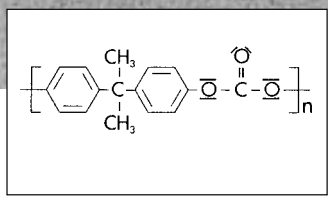
Aqueous solutions	
Ammonium fluoride, 20%	□
Ammonium persulfate	■
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	■

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
■ = compatible
□ = limited compatibility
– = not compatible
nt = not tested

Polycarbonate Track-Etch-Membranes, type 230, for the analysis of particles.





Polycarbonate Track-Etch-Membranes are manufactured from high grade polycarbonate film using track-etch technology. They retain particles on their surfaces. Their capillary pore structure is uniform and precise, with a narrow pore size distribution. Track-etch membranes are an excellent choice for accurate fractionation of particulates because of their precise pore size. In addition, their smooth, flat surface results in high particulate visibility.

Track-etch technology offers the user distinct performance advantages when excellent surface capture and high sample visibility are required. Applications: Particulate analysis, epifluorescence microscopy, fluid clarification, cytology, cell biology, bioassays, water microbiology, environmental analysis.

Specifications for polycarbonate membrane filters
Low extractables

Autoclaving
at 121° C

Thermal stability
max. temperature 140° C

Bubble point (acc. DIN 58355)
minimum value for
0.2 µm = 4.8 bar | ~70 psi,
acc. DIN 58355 for
0.4 µm 2.5 bar | ~36 psi

Chemical compatibility
see table

Thickness (acc. DIN 53105)
6 –11 µm

Flow rate for water
20 ml/min/cm^2 for 0.2 µm,
70 ml/min/cm^2 for 0.4 µm

Porosity
<15 %

Material
polycarbonate

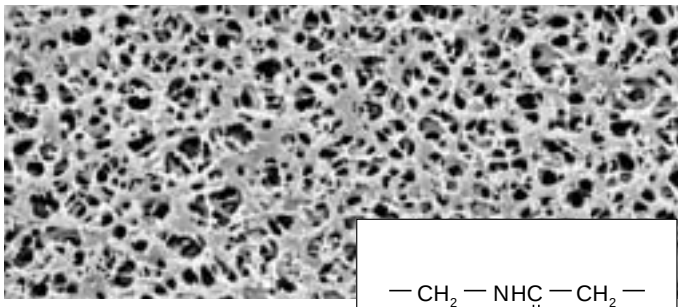
Sterilization
by autoclaving

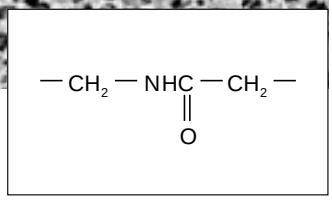
Order numbers
For polycarbonate membrane filters

25 mm diameter:
23007-25 N 0.2 µm, pack of 100, diameter 25 mm
23006-25 N 0.4 µm, pack of 100, diameter 25 mm

47 mm diameter:
23006-47 N 0.4 µm, pack of 100, diameter 47 mm
23007-47 N 0.2 µm, pack of 100, diameter 47 mm

Type 25006





Material
Polyamide

Structure
Symmetrical membrane

Pore size
0.45 µm

Reaction to water
Hydrophilic

Color
White

Typical Applications
Microbe-retentive, particle-reducing filtration of water, alkaline solutions and solvents.

Special Features
- Excellent chemical compatibility
- Superior thermal resistance

Technical Advantages
- Ideal for a wide range of applications
- Autoclavable at 121°C or 134°C

Typical Performance

Thickness (acc. DIN 53105)
Approx. 115 µm

Flow rate for water per cm² (acc. DIN 58355)
>26 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (Sartocheck 3)
min 2.3 bar | ~33 psi

Extractables
<1%

Non-specific adsorption
Bovine serum albumin, approx. 100 µg/cm²

Max. continuous operating temperature in water
100°C

Sterilization Methods
Autoclaving at 121°C or 134°C, ETO sterilization

Chemical Compatibility
Compatible with several bases and almost all organic solvents

Retentive Capacity
100% retention of Serratia marcescens test organisms (10^7/cm² filter area)

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	■
Benzene	■
Benzyl alcohol	■
n-Butanol	■
n-Butyl acetate	■
Carbon tetrachloride	■
Cellosolve	nt
Chloroform	■
Cyclohexane	■
Cyclohexanone	■
Diethyl acetamide	■
Diethyl ether	■
Dimethylformamide	□
Dimethyl sulfoxide	■
Dioxane	■
Ethanol, 98%	■
Ethyl acetate	■
Ethylene glycol	■
Formamide	■
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	■
n-Hexane	■
Isobutanol	■
Isopropanol	■
Isopropyl acetate	■
Methanol, 98%	■
Methyl acetate	■
Methylene chloride	■
Methyl ethyl ketone	■
Methyl isobutyl ketone	■
Monochlorobenzene	■
Nitrobenzene	■
n-Pentane	■
Perchloroethylene	■
Pyridine	■
Tetrahydrofuran	■
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

Acids	
Acetic acid, 25%	□
Acetic acid, 96%	–
Hydrochloric acid, 25%	–
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	–
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	–
Phosphoric acid, 25%	–
Phosphoric acid, 85%	–
Nitric acid, 25%	–
Nitric acid, 65%	–
Sulfuric acid, 25%	–
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	–

Bases	
Ammonium hydroxide, 1 N	■
Ammonium hydroxide, 25%	■
Potassium hydroxide, 32%	□
Sodium hydroxide, 32%	□
Sodium hydroxide, 1 N	■

Aqueous solutions	
Ammonium fluoride, 20%	□
Ammonium persulfate	nt
Ferric chloride, 25%	■
Formalin, 30%	□
Hydrogen peroxide	□
Sodium hypochlorite, 5%	□

The chemical compatibility can be influenced by various factors. Therefore, we recommend that you confirm the compatibility with the liquid you wish to filter by performing a trial filtration run.

Key to Symbols
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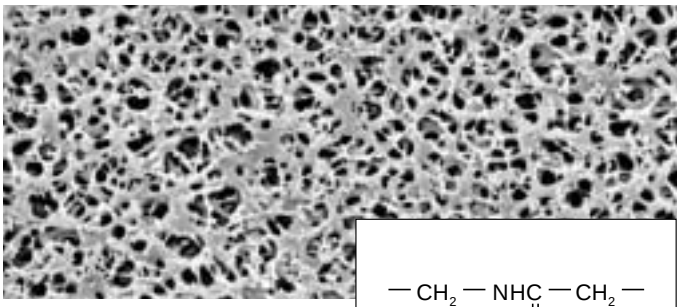
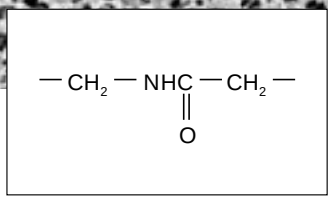
Type 25007





Material
Polyamide

Structure
Symmetrical membrane

Pore size
0.2 µm

Reaction to water
Hydrophilic

Color
White

Typical Applications
Sterile filtration of water, alkaline solutions and solvents

Special Features
- Excellent chemical compatibility
- Superior thermal resistance
- Validated using Brevundimonas diminuta

Technical Advantages
- Wide range of use
- Autoclavable at 121°C or 134°C
- Reliable sterile filtration

Typical Performance

Thickness (acc. DIN 53105)
Approx. 115 µm

Flow rate for water per cm² (acc. DIN 58355)
>12 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (Sartocheck 3)
min 3.2 bar | ~46 psi

Extractables
<1%

Non-specific adsorption
Bovine serum albumin, approx. 100 µg/cm²

Max. continuous operating temperature in water
100°C

Sterilization Methods
Autoclaving at 121°C or 134°C, ETO sterilization

Chemical Compatibility
Compatible with several bases and almost all organic solvents

Retentive Capacity
100% retention of Brevundimonas diminuta, ATCC 19146 test organisms
(10^7/cm² filter area)

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	■
Benzene	■
Benzyl alcohol	■
n-Butanol	■
n-Butyl acetate	■
Carbon tetrachloride	■
Cellosolve	nt
Chloroform	■
Cyclohexane	■
Cyclohexanone	■
Diethyl acetamide	■
Diethyl ether	■
Dimethylformamide	□
Dimethyl sulfoxide	■
Dioxane	■
Ethanol, 98%	■
Ethyl acetate	■
Ethylene glycol	■
Formamide	■
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	■
n-Hexane	■
Isobutanol	■
Isopropanol	■
Isopropyl acetate	■
Methanol, 98%	■
Methyl acetate	■
Methylene chloride	■
Methyl ethyl ketone	■
Methyl isobutyl ketone	■
Monochlorobenzene	■
Nitrobenzene	■
n-Pentane	■
Perchloroethylene	■
Pyridine	■
Tetrahydrofuran	■
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

Acids	
Acetic acid, 25%	□
Acetic acid, 96%	–
Hydrochloric acid, 25%	–
Hydrochloric acid, 37%	–
Hydrofluoric acid, 25%	–
Hydrofluoric acid, 50%	–
Perchloric acid, 25%	–
Phosphoric acid, 25%	–
Phosphoric acid, 85%	–
Nitric acid, 25%	–
Nitric acid, 65%	–
Sulfuric acid, 25%	–
Sulfuric acid, 98%	–
Trichloroacetic acid, 25%	–

Bases	
Ammonium hydroxide,1 N	■
Ammonium hydroxide, 25%	■
Potassium hydroxide, 32%	□
Sodium hydroxide, 32%	□
Sodium hydroxide, 1 N	■

Aqueous solutions	
Ammonium fluoride, 20%	□
Ammonium persulfate	nt
Ferric chloride, 25%	■
Formalin, 30%	□
Hydrogen peroxide	□
Sodium hypochlorite, 5%	□

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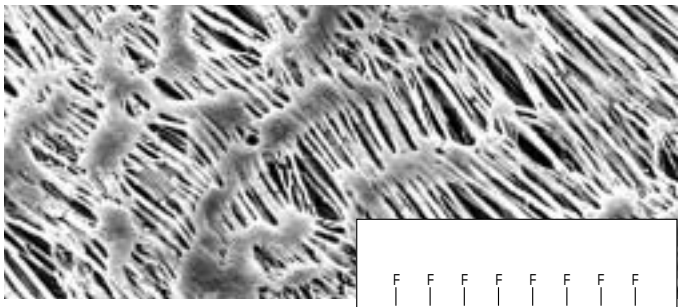

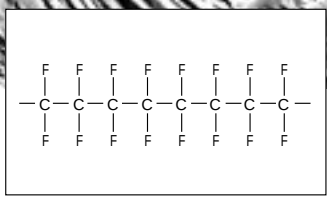

Material
PTFE

Structure
Symmetrical membrane

Pore size
0.45 µm

Reaction to water
Hydrophobic

Color
White

Typical Applications
Microbe-retentive, particle-removing filtration of air and other gases, acids, bases and solvents.

Special Features
- Outstanding chemical compatibility
- Permanently hydrophobic; is not wetted by moisture
- Excellent thermal resistance

Technical Advantages
- Compatible with almost all acids, bases and solvents
- Unimpeded air passage, even at low differential pressures
- Autoclavable at 121°C or 134°C; dry-heat sterilization possible

Typical Performance

Thickness (acc. DIN 53105)
Approx. 80 µm

Flow rate for Isopropanol per cm²
20 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355) (isopropanol)
min 0.7 bar | ~10 psi

Extractables
<1%

Thermal resistance
200°C max.

Sterilization Methods
Autoclaving at 121°C or 134°C
Dry-heat sterilization at 160°C or 180°C
ETO-sterilization

Chemical Compatibility
Compatible with solvents, acids and bases

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	■
Benzene	■
Benzyl alcohol	■
n-Butanol	■
n-Butyl acetate	■
Carbon tetrachloride	■
Cellosolve	■
Chloroform	■
Cyclohexane	■
Cyclohexanone	■
Diethyl acetamide	■
Diethyl ether	■
Dimethylformamide	■
Dimethyl sulfoxide	■
Dioxane	■
Ethanol, 98%	■
Ethyl acetate	■
Ethylene glycol	■
Formamide	■
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	■
Isopropanol	■
Isopropyl acetate	■
Methanol, 98%	■
Methyl acetate	■
Methylene chloride	■
Methyl ethyl ketone	■
Methyl isobutyl ketone	■
Monochlorobenzene	■
Nitrobenzene	■
n-Pentane	■
Perchloroethylene	■
Pyridine	■
Tetrahydrofuran	■
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

Acids	
Acetic acid, 25%	■
Acetic acid, 96%	■
Hydrochloric acid, 25%	■
Hydrochloric acid, 37%	■
Hydrofluoric acid, 25%	■
Hydrofluoric acid, 50%	■
Perchloric acid, 25%	■
Phosphoric acid, 25%	■
Phosphoric acid, 85%	■
Nitric acid, 25%	■
Nitric acid, 65%	■
Sulfuric acid, 25%	■
Sulfuric acid, 98%	■
Trichloroacetic acid, 25%	■

Bases	
Ammonium hydroxide, 1 N	■
Ammonium hydroxide, 25%	■
Potassium hydroxide, 32%	■
Sodium hydroxide, 32%	■
Sodium hydroxide, 1 N	■

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	■
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	■

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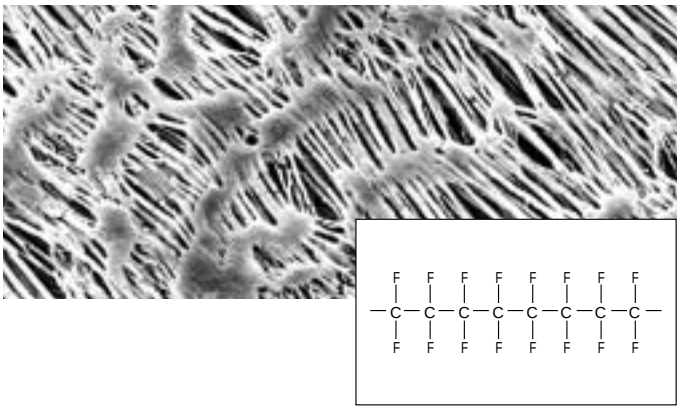

Material
PTFE

Structure
Symmetrical membrane

Pore size
0.2 µm

Reaction to water
Hydrophobic

Color
White

Typical Applications
Sterile filtration of air and other gases, acids, bases and solvents

Special Features
- Outstanding chemical compatibility
- Permanently hydrophobic; is not wetted by moisture
- Excellent thermal resistance
- Validated using Brevundimonas diminuta

Technical Advantages
- Compatible with almost all acids, bases and solvents
- Unimpeded air passage, even at low differential pressures
- Autoclavable at 121°C or 134°C; dry-heat sterilization possible
- Reliable sterile filtration

Typical Performance

Thickness (acc. DIN 53105)
Approx. 65 µm

Flow rate for Isopropanol per cm²
11 ml/min
at Δp = 1 bar | ~15 psi

Bubble point (acc. DIN 58355) (isopropanol)
min 1.0 bar | ~15 psi

Extractables
<1%

Thermal resistance
200°C max.

Sterilization Methods
Autoclaving at 121°C or 134°C
Dry-heat sterilization at 160°C or 180°C
ETO-sterilization

Chemical Compatibility
Compatible with solvents, acids and bases

Chemical Compatibility

Contact time: 24 hours at 20°C

Solvents	
Acetone	■
Benzene	■
Benzyl alcohol	■
n-Butanol	■
n-Butyl acetate	■
Carbon tetrachloride	■
Cellosolve	■
Chloroform	■
Cyclohexane	■
Cyclohexanone	■
Diethyl acetamide	■
Diethyl ether	■
Dimethylformamide	■
Dimethyl sulfoxide	■
Dioxane	■
Ethanol, 98%	■
Ethyl acetate	■
Ethylene glycol	■
Formamide	■
Gasoline	■
Glycerol	■
n-Heptane	■
Hexachlorobenzene	nt
n-Hexane	■
Isobutanol	■
Isopropanol	■
Isopropyl acetate	■
Methanol, 98%	■
Methyl acetate	■
Methylene chloride	■
Methyl ethyl ketone	■
Methyl isobutyl ketone	■
Monochlorobenzene	■
Nitrobenzene	■
n-Pentane	■
Perchloroethylene	■
Pyridine	■
Tetrahydrofuran	■
Toluene	■
Trichloroethane	■
Trichloroethylene	■
Xylene	■

Acids	
Acetic acid, 25%	■
Acetic acid, 96%	■
Hydrochloric acid, 25%	■
Hydrochloric acid, 37%	■
Hydrofluoric acid, 25%	■
Hydrofluoric acid, 50%	■
Perchloric acid, 25%	■
Phosphoric acid, 25%	■
Phosphoric acid, 85%	■
Nitric acid, 25%	■
Nitric acid, 65%	■
Sulfuric acid, 25%	■
Sulfuric acid, 98%	■
Trichloroacetic acid, 25%	■

Bases	
Ammonium hydroxide,1 N	■
Ammonium hydroxide, 25%	■
Potassium hydroxide, 32%	■
Sodium hydroxide, 32%	■
Sodium hydroxide, 1 N	■

Aqueous solutions	
Ammonium fluoride, 20%	■
Ammonium persulfate	■
Ferric chloride, 25%	■
Formalin, 30%	■
Hydrogen peroxide	■
Sodium hypochlorite, 5%	■

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Sartorius AG
Weender Landstrasse 94–108
37075 Goettingen, Germany

Phone +49.551.308.0
Fax +49.551.308.3289

www.sartorius.com

Sartorius Corporation
131 Heartland Boulevard,
Edgewood, New York 11717, USA

Phone +1.631.2544274
Fax +1.631.2544253
Toll-Free +1.800.3687178

Sartorius Limited
Longmead Business Centre
Blenheim Road, Epsom, Surrey
KT199QN, Great Britain

Phone +44.1372.737100
Fax +44.1372.729972

Sartorius S.A.
4, rue Emile Baudot
91127 Palaiseau, France

Phone +33.1.69192100
Fax +33.1.69200922

Sartorius S.p.A
Via dell'Antella, 76/A
50011 Antella (FI), Italy

Phone +39.055.634041
Fax +39.055.6340526

Sartorius K.K.
No. 3 Hoya Building 8–17
Kamitakaido 1-chome
Suginami-ku
Tokyo 168-0074, Japan

Phone +81.3.33295533
Fax +81.3.33295543

Sartorius S.A.
C/Isabel Colbrand 10-12
Edificio Alfa III
planta 4, of. 121
28050 Madrid, Spain

Phone +34.91.3586100
Fax +34.91.3588804

Vivascience AG
Feodor-Lynen-Strasse 21
30625 Hanover, Germany

Phone +49.511.524875.0
Fax +49.511.524875.19

info@vivascience.com
www.vivascience.com

Vivascience AG
Vivascience Support Center

Europe
Phone +49.180.284.8201 (Toll-free)
Fax +49.180.284.8202

International
Phone +49.511.524875.60
Fax +49.511.524875.69
info@sc.vivascience.com

Vivascience AG
Customer Service, Germany

Phone +49.551.3084023
Fax +49.551.3083289
info.germany@vivascience.com

Vivascience Ltd.
Customer Service, UK

Phone +44.1372.737159
Fax +44.1372.726171
info.uk@vivascience.com

Vivascience S.A.R.L.
Customer Service, France

Phone +33.1.69199323
Fax +33.1.60139505
info.france@vivascience.com

Vivascience Inc.
Customer Service, USA

Phone +1.877.4522345
Fax +1.631.2535445
info.usa@vivascience.com

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