

# Arium® Mini Ultrapure Water Systems

Compact Laboratory Water  
Systems for 10 Liters per Day

## Advantages

- Reliable: Delivers consistently high water quality for reliable and reproducible results
- Intuitive: Touch-activated color display with direct access to all important dispensing options
- Innovative: With unique Bagtank technology, depending on the type of system; saves time-intensive tank cleaning
- Compact: Space-saving, with a width of only 28 cm

## Product Description

Compact Arium® Mini laboratory water systems have been designed for Type 1 ultrapure water requirements of 10 Liters per day and are ideal for use in preparation of buffers, media and samples, both in life sciences applications and in analytical laboratory procedures.

A large, touch-activated screen and intuitive menu navigation ensure exceptionally easy operation. Regardless of your type of feed water available, use Arium® Mini or Arium® Mini Plus featuring our unique Bagtank technology or connect Arium® Mini Essential directly to your deionized water supply line in the lab.



## Reliable

To ensure that you always obtain reliable and reproducible results, the system ensures consistently high water quality. For your analytical requirements and especially critical applications, you additionally have the option of obtaining your system with an integrated UV lamp (185/254 nm) to reduce TOC to  $\leq 5$  ppb\*.

## Innovative

The most advanced Bagtank technology will save you from performing time-intensive cleaning and rinsing procedures. As this eliminates the need for using chemicals that can be hazardous to your health, you will help protect the environment and increase your own safety.

## Intuitive

Easily operate the Arium® Mini using the touch-activated color display – even when you are wearing laboratory gloves. Easy-to-understand icons will guide you through the menu for intuitive, error-free operation. Simplify your sample preparation and benefit from direct access to all important dispensing functions: manual, volume-controlled or predefined volumes (Favorites function).

## Compact

With a width of only 28 cm, Arium® Mini will readily fit into any laboratory environment. This handy device will give you the flexibility you need in integrating it into nearly any location.

\* Depends on the type of system and your feed water

## Unique Bagtank Technology

The Arium® Mini and Arium® Mini Plus are the only ultrapure water systems with incorporated Bagtank technology, which features a 5-Liter bag originally designed for the pharmaceutical industry and integrated on the side of the system. This bag enables you to optimally store your pretreated pure water in the bag for further purification to Type 1 ultrapure water.

In the process, the closed system prevents ions and gases from entering, ensuring that the conductivity remains constantly low.

Depending on your needs, you can easily exchange the bag, which thus prevents the buildup of a permanent biofilm.

Arium® Mini – unique quality “made in Germany”

## Three Product Versions

It's your choice depending on your specific requirements:

Type of System	Feed Water*
Arium® Mini Plus with integrated Bagtank	Direct connection to tap water
Arium® Mini with integrated Bagtank	Pretreated water from supply container
Arium® Mini Essential	Directly connects to pretreated water line (RO   DI   EDI)

\* For details, see inlet water specifications.

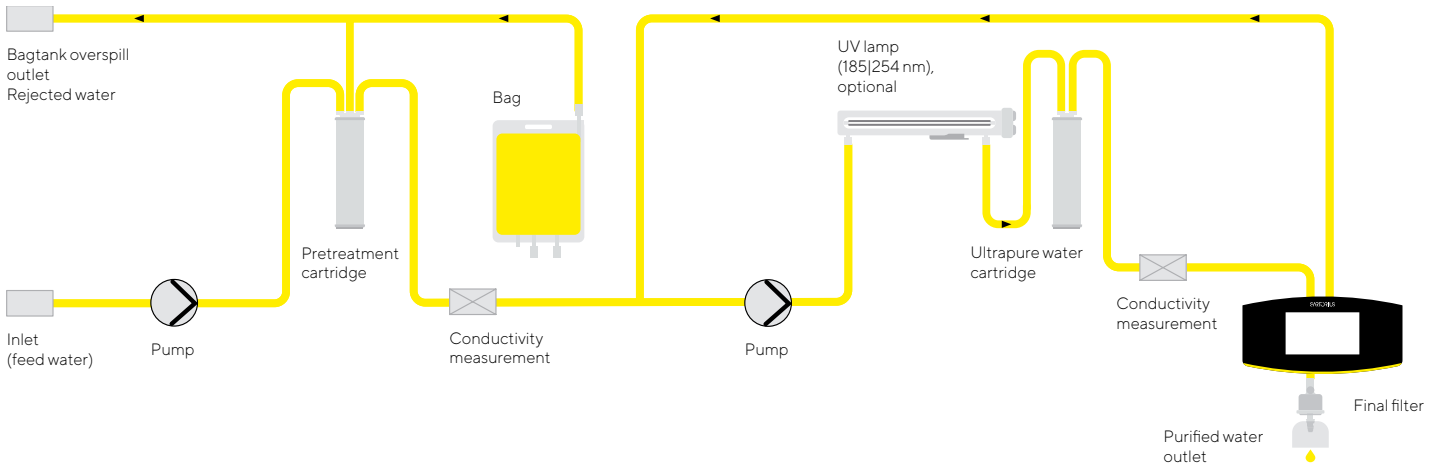
## Technical Specifications

### General Specifications

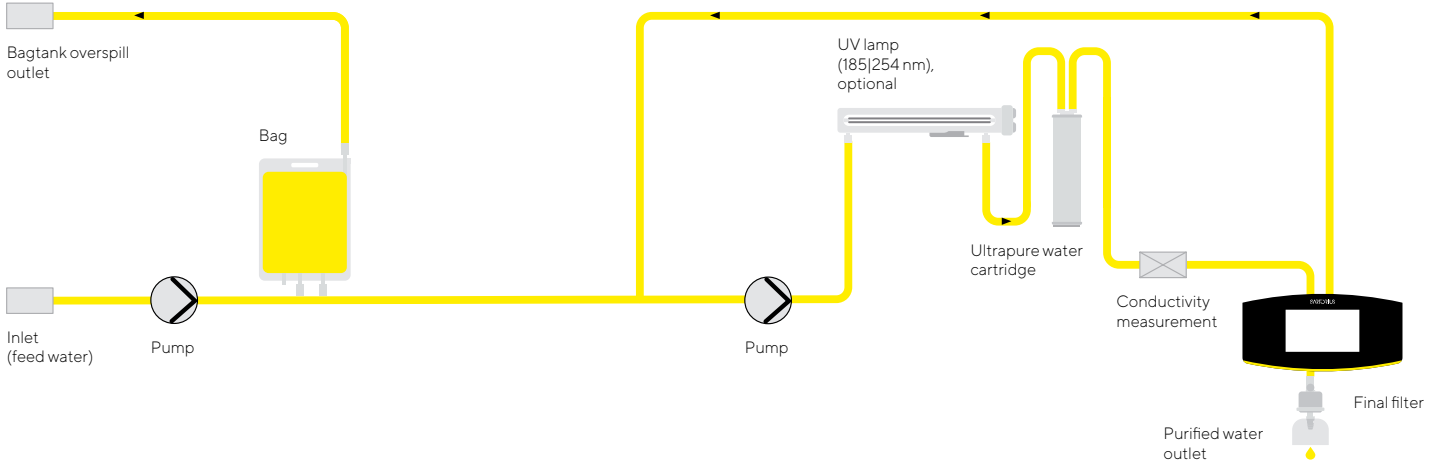
Water purification method	Adsorption by spherical activated carbon, catalyst, reverse osmosis, ion exchange, optional UV irradiation, and by point-of-use particle-removing filtration   sterile filtration
Dimensions: width × height × depth	280 × 509.4 × 530.7 mm (11 × 20 × 20.9")
Empty weight	Approx. 13 kg (28.6 lbs.)
Operating weight	Approx. 23 kg (50.6 lbs.)
Power supply	100 – 240 VAC; 50 and 60 Hz, 2 A (max.)
Operating temperature	2 °C – 35 °C at max. 80% relative humidity
Storage temperature	5 °C – 45 °C at max. 80% relative humidity



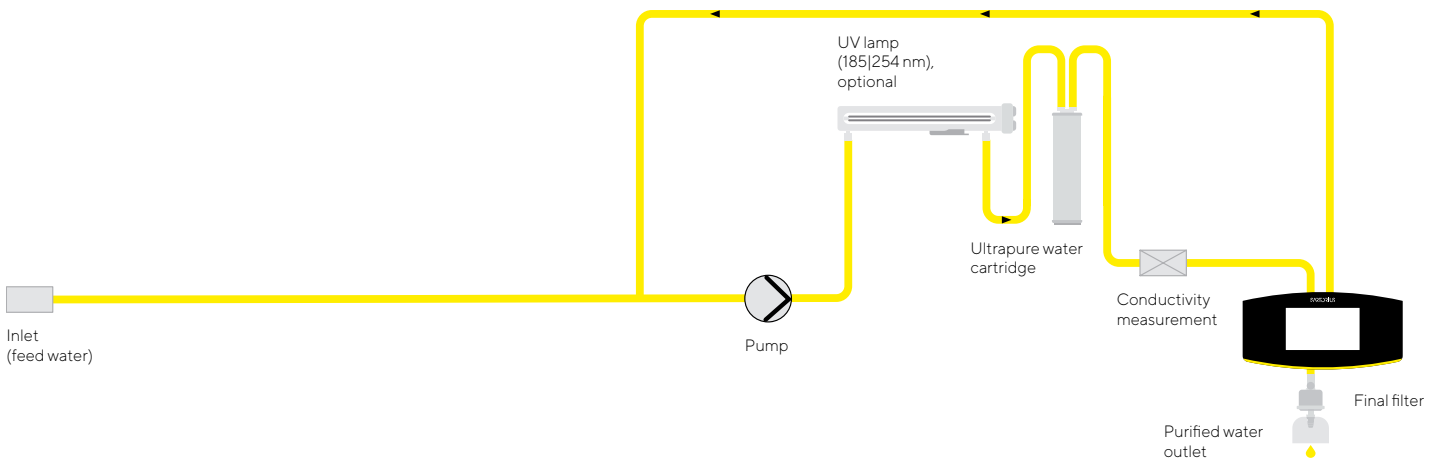
Example showing Arium® Mini Plus with opened side cover



Flow diagram for Arium® Mini Plus



Flow diagram for Arium® Mini



Flow diagram for Arium® Mini Essential

## Specifications of Water Purified by Arium® Mini Plus

Type of water	ASTM Type 1 ultrapure water	Type 3 pure water
Production output <sup>1</sup>	-	Up to 8 L/hr.
Water dispensing flow rate <sup>2</sup>	Up to 1.0 L/min	Pressure-free via ball valve
Volume-controlled dispensing <sup>2</sup>	50 mL steps, between 0.05 and 5L	-
Volume accuracy <sup>3</sup>	±3% between 0.25 and 5 L	-
Typical conductivity	0.055 µS/cm compensated to 25 °C <sup>4</sup>	< 20 µS/cm <sup>7</sup>
Typical resistivity	18.2 MΩ × cm compensated to 25 °C <sup>4</sup>	< 0.05 MΩ × cm <sup>7</sup>
TOC content <sup>4</sup> (system with UV lamp)	< 5 ppb	-
Bacteria	< 0.01 CFU/mL	< 0.01 CFU/mL
Particle content	No particles > 0.22 µm	No particles > 0.22 µm
Pyrogens (endotoxins) <sup>8</sup>	< 0.001 EU/mL	-
RNase <sup>8</sup>	< 1 pg/mL	-
DNase <sup>8</sup>	< 5 pg/mL	-
Typical ion retention	-	Up to 98%
Retention of dissolved organic substances (MW > 300 Dalton)	-	> 99%
Particle and microorganism retention	-	> 99%

### Feed Water Specifications for Arium® Mini Plus

Exclusively tap water of potable quality according to the drinking water standards of the USA, the European Union or Japan.

Input pressure	0.5 – 6 bar (approx. 7.3 – 87 psi); recommended > 2 bar (> 29 psi)
Temperature	2 – 30 °C
Specific conductivity	< 1500 µS/cm compensated to 25 °C
TOC	< 2,000 ppb
Max. total hardness (max. CaCO <sub>3</sub> )	360 ppm
Free chlorine	< 4 ppm
Iron (total Fe content)	< 0.1 ppm
Fouling Index (SDI)	< 10
Turbidity	< 1 NTU
pH range	4 – 10

<sup>1</sup> Depending on the feed water pressure, temperature, and condition of the RO modules

<sup>2</sup> Depending on the hydrostatic pressure, and connected accessories and/or final filter

<sup>3</sup> Under constant operating conditions

<sup>4</sup> Determined with municipal water (Goettingen), TOC approx. 1000 ppb

<sup>5</sup> When using an Arium® Sterileplus (Sartopore® 2 150)

<sup>6</sup> Measured value output adjustable to 25 °C compensated or uncompensated

<sup>7</sup> Depending on feed water

<sup>8</sup> If an Arium® Cellplus is used

## Ordering Information

### Arium® Mini Plus for the production of ASTM Type 1 Ultrapure Water and Type 3 Pure Water

Equipment supplied:

1 Arium® Mini Plus; optionally supplied with UV lamp

Order No. without UV lamp	Order No. incl. UV lamp	Description
H2O-MA-T	H2O-MA-UV-T	Arium® Mini Plus, benchtop system; flow rate for Type 3 pure water, 8 L/hr.

## Specifications of Water Purified by Arium® Mini

Type	ASTM Type 1 ultrapure water
Output performance for purified water	-
Water dispensing flow rate <sup>1</sup>	Up to 1.0 L/min.
Volume-controlled dispensing <sup>1</sup>	50 mL increments, between 0.05 L and 5 L
Volume accuracy <sup>2</sup>	±2% between 0.05 L and 5 L
Typical conductivity	0.055 µS/cm, compensated to 25 °C <sup>4</sup>
Typical resistivity	18.2 MΩ × cm, compensated to 25 °C <sup>4</sup>
TOC content <sup>4</sup> (system with UV lamp)	≤ 5 ppb
Bacteria	< 0.01 CFU/mL
Particle content	No particles > 0.22 µm
Pyrogens (endotoxins) <sup>5</sup>	0.001 EU/mL
RNase <sup>5</sup>	< 1 pg/mL
DNase <sup>5</sup>	< 5 pg/mL

### Feed Water Specifications for Arium® Mini

Water pretreated by reverse osmosis, distillation or deionization

Inlet pressure	Without pressure
Temperature	2 °C – 30 °C
Specific conductivity	< 100 µS/cm, compensated to 25 °C
TOC content	< 50 ppb
Turbidity	< 1 NTU
pH range	4 – 10

## Ordering Information

### Arium® Mini for production of ASTM-Type 1 Ultrapure Water

Equipment supplied:

1 Arium® Mini; optionally supplied with UV lamp

Order No. without UV lamp	Order No. incl. UV lamp	Description
H2O-MM-T	H2O-MM-UV-T	Arium® Mini, benchtop system, for manual feed with pretreated water from a supply container

## Specifications of Water Purified by Arium® Mini Essential

Type of water	ASTM Type 1 ultrapure water
Water dispensing flow rate <sup>1</sup>	Up to 1.0 L/min
Volume-controlled dispensing <sup>1</sup>	50 mL increments, between 0.05 L and 5 L
Volume accuracy <sup>2</sup>	±2% between 0.05 L and 5 L
Typical conductivity	0.055 µS/cm, compensated to 25 °C <sup>4</sup>
Typical resistivity	18.2 MΩ × cm, compensated to 25 °C <sup>4</sup>
TOC content <sup>4</sup> (system with UV lamp)	≤ 5 ppb
Bacteria	< 0.01 CFU/mL
Particle content	No particles > 0.22 µm
Pyrogens (endotoxins) <sup>5</sup>	< 0.001 EU/mL
RNase <sup>5</sup>	< 1 pg/mL
DNase <sup>5</sup>	< 5 pg/mL

### Feed Water Specifications for Arium® Mini Essential

Water pretreated by reverse osmosis, distillation or deionization

Inlet pressure	0 – 6.9 bar; (0 – approx. 100 psi); recommended > 2 bar (> 29 psi)
Temperature	2 °C – 30 °C
Specific conductivity	< 100 µS/cm, compensated to 25 °C
TOC content	< 50 ppb
Turbidity	< 1 NTU
pH range	4 – 10

## Ordering Information

### Arium® Mini Essential for Production of ASTM Type 1 Ultrapure Water

Equipment supplied:  
1 Arium® Mini Essential; optionally supplied with UV lamp

Order No. without UV lamp	Order No. incl. UV lamp	Description
H2O-MU-T	H2O-MU-UV-T	Arium® Mini Essential, benchtop system; for direct connection to pretreated water supply

# Consumables

## Arium® Sterile Plus

### Sterile and particle-free water dispensing

- Excellent service life and flow rates
- Integrity tested
- Validated according to HIMA and ASTM F-838-05
- Meets WFI quality standards pursuant to USP incl. USP plastic class VI test
- Production in accordance with DIN ISO 9001
- Easy to install
- Automatic venting
- Certified quality

### Description

The Arium® Sterile Plus (Sartopore® 2 150) is a sterile, ready-to-use membrane filter capsule suitable for the most stringent requirements. Arium® Sterile Plus membrane filter capsules contain a hydrophilic, heterogeneous polyethersulfone double membrane. These provide an excellent service life and flow rates. The capsule can be attached to an Arium® Smart Station and reliably removes all particles and microorganisms. A hydrophobic PTFE membrane at



the farthest point “upstream” allows for easy and clean ventilation of the capsule.

All pleated Arium® Sterile Plus membrane filter units are validated as sterile filters for biopharmaceutical application according to the HIMA and ASTM F-838-05 guidelines (documentation available). During the manufacturing process, every capsule is integrity-tested to meet the highest quality standards.

### Technical Specifications | Ordering Information

Materials	
Membranes	Asym. Polyethersulfone
Bell assembly	Polycarbonate
Other plastics	Polypropylene

General Specifications	
Pore size	0.45 µm × 0.22 µm
Filtration area	0.015 m <sup>2</sup>
Input and Output	¼" Plug-in connector
Sterilization (max. 3 cycles)	Autoclaving at 134 °C, 1 bar, 30 min.
Max. diffusion	1 mL/min @ 2.5 bar
Min. bubble point	3.2 bar

Typical Specifications	
Bacteria	< 0.001 CFU/mL
Particle content	No particles > 0.22 µm

Order number	Description
5441307H4--CE	Arium® Sterile Plus (Sartopore® 2 150 Capsule), 1 pc

### Intended Use

Device type:

- Arium® Mini
- Arium® Mini Essential
- Arium® Mini Plus

# Arium® Cell Plus Ultrafilter

## For effective removal of endotoxins in cell culture applications

- Effective removal of RNase | DNase
- Reliable removal of endotoxins
- High flow rate performance
- Certified quality
- Sterile-packaged

## Description

The Arium® Cell Plus is a point-of-use ultrafilter for efficient removal of endotoxins, RNase, DNase, microorganisms and particles.

Connected to an Arium® Smart Station, this sterile-packaged ultrafilter provides high protection for your critical cell culture applications. A protective bell supplied with the ultrafilter additionally prevents retrograde contamination.

Moreover, the high-grade material selected for Arium® Cell Plus enables excellent total throughputs and optimal flow rates.



## Technical Specifications | Ordering Information

Materials	
Membrane	Polysulfone
Composite material	Polyurethane (PUR)
Housing	Acrylonitrile butadiene styrene (ABS)
Protective bell	Polycarbonate (PC)

Typical Specifications	
Flow rate (depends on the inlet pressure and type of system)	Up to 2.0 L/min
Endotoxins	< 0.001 EU/mL
Bacteria	< 1 cfu/100 mL
RNase concentration	< 1 pg/mL
DNase concentration	< 5 pg/mL

General Specifications	
Cut-off	15,000 Daltons   0.005 µm
Inlet and Outlet	¼" Plug-in connector
Dimensions (height × diameter)	169 × 50 mm
Max. operating pressure	6 bar (87 psi)
Max. inlet temperature	50 °C
Effective membrane area	0.5 m <sup>2</sup>

Order number	Description
H2O-CUF	Arium® Cell Plus Ultrafilter, 1 pc

### Intended Use

- Device type:
- Arium® Mini
  - Arium® Mini Essential
  - Arium® Mini Plus



# Arium® Mini Plus Pretreatment Cartridge



## Reliable Protection for the Pretreatment of Feed Water

- Fast and effective adsorption of impurities by high-grade activated carbon
- Highly efficient catalyzer for removing oxidating agents such as chlorine
- Highly efficient reverse osmosis membranes; optimized water usage
- Low-energy membranes for ecological and economic operation

## Description

Efficient purification is performed by a combination of activated carbon, a catalyzer and a downstream reverse osmosis membrane.

The spherical, catalytic activated carbon and an additional catalyst reliably remove oxidants, such as chlorine and ozone, heavy metal ions and particulate contaminants, from feed water.

In addition, due to the downstream reverse osmosis membrane, up to 98% of all salts, as well as bacteria and particles, are retained.

## Technical Specifications | Ordering Information

Materials	
Housing	High-grade polypropylene
Filter media	Spherical, catalytic activated, carbon
Dimensions [W × H × D]	18 × 26 × 11 cm (7 × 10.2 × 4.3")
Operating weight	3.5 kg (7.7 lbs.)
Feed water requirements	See Technical Specifications on page 3

Order Number	Description
H2O-CPR	Arium® Mini Plus pretreatment cartridge; qty. per pkg.: 1

### Intended Use

Device type:

- Arium® Mini Plus

# Arium® UV Lamp (185 | 254 nm)

## Ultrapure water, free of TOC

- Horizontal installation, optimized temperature gradient
- Effectively destroys organic compounds
- Easy replacement

## Description

The horizontally arranged UV lamp provides particularly reliable results. In contrast to vertical devices, the temperature gradient is less pronounced and thus prevents the influence on the activity of UV waves.

The two different wavelengths reliably remove organic substances up to a TOC (total organic carbon) content of  $\leq 5$  ppb\*.



## Technical Specifications | Ordering Information

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### Materials

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TOC value for product water\*  $\leq 5$  ppb

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### Order number

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611CEL1

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### Description

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Arium® UV Lamp (185 | 254 nm), 1 pc

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### Intended Use

Device type:

- Arium® Mini
- Arium® Mini Essential
- Arium® Mini Plus

\* Depends on the type of system and on the feed water

# Arium® Scientific Pack

## Deionization Cartridge Featuring Top-Down Flow Technology

- High performance capacity due to efficient ion exchange resins
- Fast and effective adsorption of impurities by high-grade activated carbon
- Optimized flow prevents separation of the mixed-bed resin
- Patented connection method; easy exchange of consumables

## Description

The cartridge kits have been optimized for removal of both organic and inorganic constituents. Each kit has been designed specifically to match the particular laboratory water system and delivers ultrapure water that exceeds the ASTM Type 1 quality standard. This consistently high-quality water ensures optimal reproducibility of your results.

Optimized filling materials, such as highly effective activated carbon along with exceptionally efficient ion exchange resins, ensure long-lasting performance and low-maintenance operation.



The top-down technology provides ideal purification kinetics, preventing any mixing of cleaning media. The cartridge has been designed for enhanced flow rate in the cross section and optimal contact time with the medium.

## Technical Specifications | Ordering Information

Materials	
Housing	Highly pure polypropylene
Filter media	Spherical, catalytic activated carbon Ultrapure mixed bed ion exchange resin, semiconductor-grade
Further data on purified water quality	See Technical Specifications on page 3

Order Number	Description
H2O-S-PACK	Arium® Scientific kit; qty. per pkg.: 1

### Intended Use

Device type:

- Arium® Mini
- Arium® Mini Essential
- Arium® Mini Plus

# Arium® Bag

## The Most Innovative Bagtank System

- Fast and easy replacement of the Arium® Bag
- High user safety as the Bagtank eliminates the need for cleaning chemicals

## Description

Pure water is stored inside the laboratory water system, which reliably protects pretreated pure water from secondary contamination.

Sartorius Bagtank technology enables consistent water quality over a prolonged period, ensuring continuously reproducible results.

Unlike conventional water tanks, the Arium® Bag ensures high user safety and saves time as it eliminates the need for a complicated cleaning procedure with chemicals.



## Technical Specifications | Ordering Information

Materials	
Bag	S71 proprietary film
Tubing	TuFlux®

Bag dimensions [H × W]	
5-Liter bag	40 × 33 cm (15.7" × 12.9")

Order Number	Description
H2O-CBS-5-S	Arium® 5-Liter bag; qty. per pkg.: 1

### Intended Use

Device type:

- Arium® Mini
- Arium® Mini Plus

# Sartorius Service

## We Ensure the Quality of Your Results

At Sartorius, quality products go hand in hand with professional service. With our wide service offering, we will help guarantee the safe, reliable and optimal operation of your Arium® Mini. Just ask us and we will even cover the entire life cycle of your laboratory water system – from commissioning to qualification to regular maintenance. Together with you, we will ensure the consistently high quality of your laboratory water purification.

## Our Services at a Glance:

### **Installation and Commissioning**

Your advantage: Your system will operate reliably at peak performance from day one

### **Equipment Qualification (IQ | OQ)**

Your advantage: You will meet all regulatory requirements (GMP | GLP)

**Regular Preventative Maintenance**, Including **Calibration**, inspection and testing of your system and exchange of consumables

Your advantages: Optimal operation of your system; reliable results; prevention of downtime or even equipment failure

Get more information now at:

[www.sartorius.com/en/services](http://www.sartorius.com/en/services)




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