



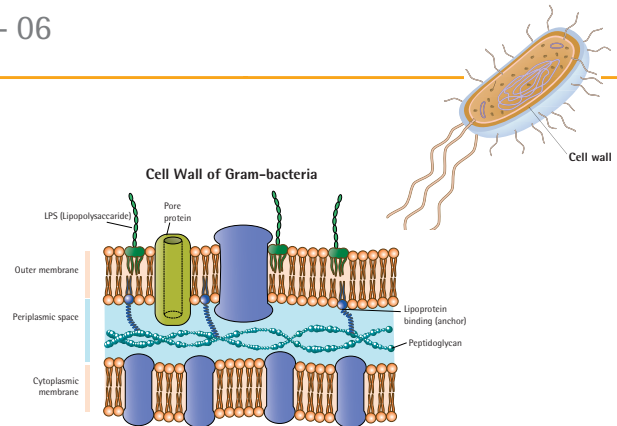
**FOR  
INTERNAL USE**

# arium® pro VF versus Application Filters

Endotoxins – Bio-Applications Grade Water D5196 – 06

**Question:** What system configuration achieves the quality status Bio-Application Grade Water D5196 – 06?

**Result:** Only two of the configurations tested achieve the required quality. arium® pro VF fares the best by far.



## Type 1 Water

According to Active Standard ASTM Bio-Application Grade Water D5196 – 06 (focus endotoxin content < 0.01 EU/mL)

### Examples of application areas:

- Electrophoresis
- Media for cell cultures
- DNA sequencing
- PCR (Polymerase Chain Reaction)
- Production of antibodies

### Effects of increased endotoxin content:

- Interaction with cell signaling pathway can cause cell apoptosis
- Impact on lipid composition during MS analysis

arium® pro VF

### Advantages of achieving quality quickly:

(Conductivity = 0.055 µS/cm):

- Minimizes faulty analyses
- Reduces water consumption
- Extends maintenance intervals
- Saves costs

## Experimental Conditions

arium® pro VF with a sterile final filter versus Millipore MilliQ Advantage A10, with 5 available final filters

The materials for the endotoxin test (LAL test, Lymulus-Amoebocyte lysates) were used from Cape Cod Associates.

The test sensitivity was 0.00097 EU/mL.



MilliQ Advantage



BioPak

VOC-Pak

EDS-Pak

LC-Pak

# Results

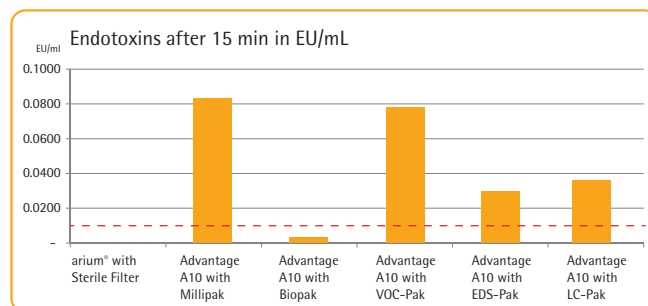
The following graphic provides a summary of the results:

## arium® pro VF convinces through:

- The ultimate endotoxin retention efficiency
- Fulfillment of Bio-Application Grade Standard for endotoxins
- Optimized replacement intervals minimize consumables required
- No change of the filter unit is required, regardless of the application

## Competitor Products:

- Only one out of five of the competitor filters attained the required quality
- Application-related filter replacement is mandatory
- Only the Bio-Pak meets the Bio Application Grade Standard
- For reliable results, the Bio-Pak must be replaced regularly (every 3 months)



--- <math>< 0.01</math> EU/mL limit value Bio-Application Grade Water

All filters were put into operation and used in accordance with the manufacturer's instructions.

## arium® pro VF – One system fits all

- ▶ Safe
  - Reliable endotoxin retention
  - No secondary contamination, ultrafilter is part of the recirculation loop
  - No application-related change of filter unit required
- ▶ Cost efficient and time-saving
  - Optimized replacement interval thanks to modern ultrafilter crossflow technology
- ▶ Practical | flexible
  - Suitable for all life science and analytical applications - simplifies processes

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