

3M Purification

LifeASSURE™ BDA020 Series Sterilising Grade Filter



0.2 µm rated filters for Bottled Water & Beverage microbiological stability

The LifeASSURE™ BDA020 series filter helps bottled water and other beverage processors meet the highest standards for microorganism control. Combined with 3M Purification's range of particle control and prefiltration filter cartridges, LifeASSURE™ BDA020 series filters offer bottlers a complete solution for rigorous contaminant control while maintaining long service life and low operating costs.

Durable Design

The LifeASSURE™ BDA020 series filter membrane and cartridge design innovations result in a highly durable filter cartridge, capable of secure operation through numerous cycles of hot water sanitation, steam sterilization, and chemical based cleaning and sanitation.

ADVANCED TECHNOLOGIES

Highly Asymmetric BDA020 Membrane

LifeASSURE™ BDA020 series filters incorporate a novel dual-layer polyethersulfone (PES) membrane with a high degree of asymmetry (Figure 1. on the next page). When viewed in cross-section, the membrane contains larger pores on the upstream surface that gradually taper to smaller pores towards the down stream surface. Compared to conventional membranes with a symmetric pore structure, this structure provides greater contaminant capacity, since it presents greater open spaces (void volume) in which to retain these contaminants. This increase in capacity leads directly to longer service life. In addition, the asymmetric structure provides less resistance to flow, resulting in a lower pressure drop when compared at a constant flow rate to competitive filters, allowing a user to employ fewer LifeASSURE™ BDA020 series filters for any given flow rate.

Applications

LifeASSURE™ BDA020 Series filters are optimized for Food & Beverage applications requiring sterilizing 0.2 micron retention rated performance.

- Bottled Water
- Soft Drinks
- Process Water
- Intermediates & Ingredients
- Syrups
- Dyes & Flavors

Features & Benefits

Validated 0.2 µm absolute rated membrane

- Reliable sterilizing filtration

Asymmetric dual-layer polyether sulfone membrane

- Exceptionally high capacity and service life to help maximize economy

Advanced Pleat Technology Construction

- Allows superior fluid and contaminant access to filter surface area for greatest service life and flow rates

CFR 21 Listed Materials of Construction, filter cartridges are compliant with Regulation (EC) 1935/2004, USP Biological Reactivity for Plastics Test—Class VI, Technical Support Guide

- Eases regulatory concerns



Advanced Pleat Technology Design

LifeASSURE™ BDA020 series filters feature Advanced Pleat Technology (APT) design for extended service life. This design technology helps to maximize the useful surface area of the filter while maintaining open flow paths between the media pleats (refer to Figure 2.). By employing the APT design, the LifeASSURE™ BDA020 series filter provides lower pressure drops, longer service life, and lower overall operational costs.

Novel Media Support Design

LifeASSURE™ BDA020 series filters cartridge employ a design that results in higher beverage flow versus pressure drop compared to competitive filters. This 3M Purification development combines the high flowing LifeASSURE™ BDA020 series filter membrane with special support layers upstream and downstream of the membrane. When combined with the previously mentioned APT, this feature greatly increases flow per cartridge, and results in lower overall operational costs.

ADVANCED PERFORMANCE

Extended Service Life

In the majority of beverage applications, the final membrane filter is used in a continuous (as opposed to a batch) operation. Its service life is measured either by the volume filtered, or the number of days in service, before becoming permanently blocked. Filters that provide longer service life not only reduce direct operational costs, but also reduce indirect filter costs as well (filter change-out/installation labor, downtime between change-outs, filter flushing, etc.). The LifeASSURE™ BDA020 series filter cartridge's unique combination of highly asymmetric membrane, APT design, and novel upstream & downstream supports all work together to help maximize the volume of beverage that can be processed.

Absolute Microbiological Control

The primary purpose of a membrane filter cartridge in bottled water and beverage processing is to effectively control even the smallest microorganisms. LifeASSURE™ series filters provide superior retention of common spoilage microorganisms, even at challenge concentrations that far exceed those experienced by most beverage producers. The LifeASSURE™ BDA020 series cartridge membrane has been validated for complete retention of *Brevundimonas diminuta* (*B. diminuta*) (ATCC 19146) at a concentration of 10⁷ CFU/cm² or greater.

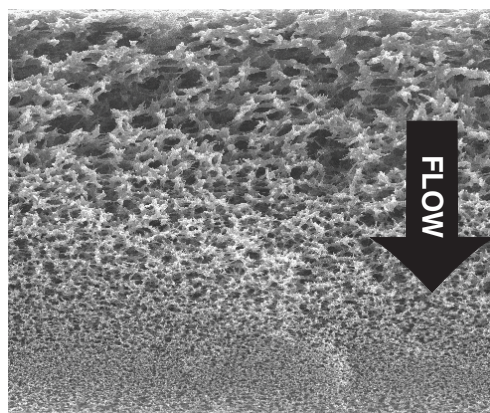


Figure 1. SEM Photograph Showing Life-ASSURE™ BDA020 Series Filter Membrane Cross-Section

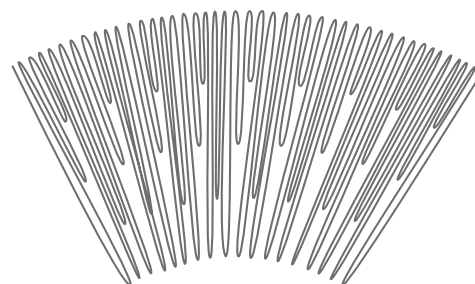


Figure 2. - Advanced Pleat Technology

LifeASSURE™ BDA020 Series Filters	Microorganism	Retention Level
BDA020	<i>B. diminuta</i>	Complete
BDA020	<i>Pseudomonas aeruginosa</i> (<i>Ps. aeruginosa</i>)	Complete

Fast Flow Rates at Low Pressure Drops

3M Purification has combined three key technological advances to provide a fast flow rate per unit of pressure drop. These three technologies, APT design, a novel upstream and downstream support design, and a highly asymmetric microporous membrane, afford users with faster process flow rates using fewer filters as compared to alternative filters. When installed in an existing system with a fixed flow rate, LifeASSURE™ BDA020 series filters exhibit a lower pressure drop compared to alternative filters. Since filter change-out is usually tied to a terminal differential pressure drop (typically between 20 and 35 psid), employing filters that exhibit a lower initial pressure drop can result in longer filter service life. Alternatively, in a system when determining the number of filters needed to provide a desired flow rate at a given pressure drop, faster flowing filters will result in smaller, more economical systems.

Prefiltration Selections

Many bottling applications employ a prefilter and final filter in series to achieve maximum performance and economy. Prefilters are used to protect and extend the life of more expensive final filters. 3M Purification offers a number of premium prefilter choices: Betafine™ D series pleated filter cartridges, Betapure™ NT-T series depth filter cartridges and LifeASSURE™ BLA series membrane filter cartridges.

Those preferring depth-style filters can select from 3M Purification's Betapure™ NT-T series prefilter family which employs an advanced media design that enhances flow while extending service life. For additional bioburden control, 3M Purification's LifeASSURE™ BLA series filter cartridges, featuring dual-zone membrane, are designed to deliver the ultimate in final membrane protection and bioburden reduction.

3M Purification Filter Housings

A specialized range of filter housings is available to meet the needs of the food & beverage industry. They provide easy access for filter change-out and afford a secure seal between filter and housing to help prevent fluid bypass. All housings are constructed using 316L stainless steel to maximize corrosion resistance. Internal surfaces of the housings are polished to 20 micro-inch Ra to limit microbial adhesion and provide easy cleaning. 3M Purification also offers custom-design, fully automated filtration skids and mobile units. These units can incorporate membrane housings, prefilter housings, SIP and CIP systems along with all necessary piping, valves, monitoring devices and computer controls for reliable, hands-free operation.



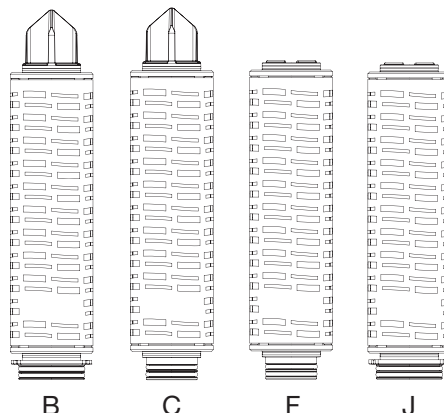
Custom designed, fully automated filtration skids and mobile units are available.

Operating Parameters & Specifications

Materials of Construction	
Membrane	Dual layer polyethersulfone
Media Support Layers	Polypropylene
Inner Core, Outer Cage, End Cap Adapters	Polypropylene
Gasket & O-ring Options	Various polymers available
Encapsulated Adapter Reinforcing Ring	Polysulfone
Operating Conditions	
Typical Water Flow Rate at 25 °C	11 lpm/100 mbar
Maximum Forward Pressure Differential	5.5 bar @ 25 °C, 1.7 bar @ 80 °C
Maximum Reverse Pressure Differential	0.689 bar @ 25 °C
Maximum Forward Flow Diffusion at 25 °C per 10" filter	33 cc/min @ 2.75 bar
Maximum Hot Water Sanitation Temperature	85 °C
Maximum Steam Temperature	126 °C
Maximum Peracetic Acid Exposure	1% (10,000 ppm)
Cartridge Dimensions	
Filtration Surface Area	0.67 m ²
Outer Diameter	70 mm
Nominal Length	254 mm, 508 mm, 762 mm, 1016 mm

LifeASSURE™ BDA020 Series Filter Ordering Guide

Cartridge Code	Configuration Code	Nominal Length Code	End Modification Code	Gasket/O-ring Material Code
BDA020	F	01 10" 02 20" 03 30" 04 40"	B — 226 O-ring & Spear, Code 7 C — 222 O-ring & Spear Code 8 F — 222 O-ring & FlatCap, Code 3 J — 226 O-ring & FlatCap	A — Silicone B — Fluorocarbon C — EPR D — Nitrile



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3M Purification Pty Limited

140 Sunnyholt Road
 Blacktown NSW 2148
 AUSTRALIA

Tel. 1300 367 362
 Fax. 1800 671 599

www.3mpurification.com.au

New Zealand

PO BOX 33-246
 North Shore 0740
 Auckland, NEW ZEALAND

Tel. 0800 362 886
 Fax. 0800 362 880

www.3m.com/nz