ThermoFisher SCIENTIFIC



Industrial filtration

LifeASSURE BNA020 filters

thermo scientific

0.2 µm rated filters for bottled water and beverage microbiological stability

The Thermo Scientific™ LifeASSURE™ BNA020 Filter helps bottled water and other beverage processors meet high standards for microorganism control. Combined with Thermo Fisher's range of particle control and prefilters, LifeASSURE BNA020 filters offer bottlers a complete solution for rigorous contaminant control while maintaining long service life and low operating costs.



Durable design

The LifeASSURE BNA020 filter membrane and cartridge design innovations result in a durable filter cartridge, capable of secure operation through numerous cycles of hot water sanitization, steam sterilization, and standard chemical based cleaning and sanitization.

Advanced technologies

Highly asymmetric membrane

LifeASSURE BNA020 incorporates a novel single layer polyethersulfone membrane with a high degree of asymmetry (Figure 1). When viewed in cross-section, the membrane contains larger pores on the upstream surface that gradually taper to smaller pores towards the downstream 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 BNA020 filters for any given flow rate.

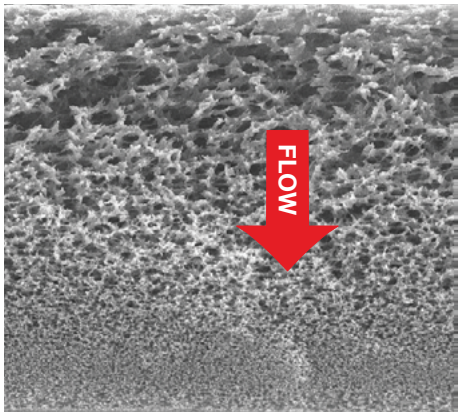


Figure 1. SEM photograph showing Thermo Scientific™ LifeASSURE™ BNA020 Filter membrane cross-section

Features and benefits

Features	Benefits
0.2 µm rated membrane	• Reliable LRV microorganism control
Asymmetric polyethersulfone (PES) membrane	• Excellent capacity and service life to help maximize economy
Advanced Pleat Technology (APT) construction	• Allows superior fluid and contaminant access to filter surface area for excellent service life and flow rates
Food contact compliance	Certain LifeASSURE BNA filter products are compliant with: • US FDA 21 CFR • EU food contact regulation (EC) 1935/2004 • Other food contact regulations

Contact your Thermo Fisher Scientific representative for detailed declaration of compliance information for food contact applications.

Applications

LifeASSURE BNA020 filters are optimized for food and beverage applications requiring reduction of fine particles and microorganisms at the 0.2 µm level.

- Bottled water
- Soft drinks
- Intermediates and ingredients
- Syrups
- Dyes and flavors

Advanced Pleat Technology (APT) design

LifeASSURE BNA020 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 BNA020 filter provides lower pressure drops, longer service life, and lower overall operational costs.

Novel media support design

LifeASSURE BNA020 filters employ a design that results in higher beverage flow versus pressure drop compared to competitive filters. This Thermo Fisher development combines the high flowing PES 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 BNA020 filter's combination of highly asymmetric PES membrane, APT design, and novel upstream/downstream supports all work together to maximize the volume of beverage that can be processed.

Microbiological control

The primary purpose of a membrane filter cartridge in bottled water and beverage processing is to effectively control even the smallest microorganisms.

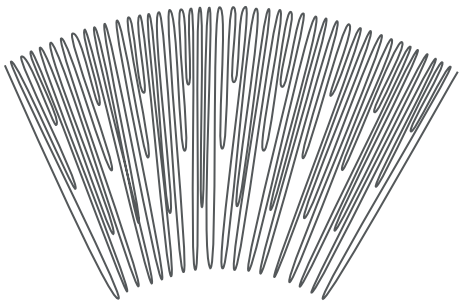


Figure 2. Advanced Pleat Technology (APT)

LifeASSURE BNA020 0.2 µm rated filters provide superior retention of common spoilage microorganisms, even at challenge concentrations that far exceed those experienced by most beverage producers. LifeASSURE BNA020 filter membrane has been shown to provide Log Reduction Values (LRV) in excess of 7 with *Brevundimonas diminuta (B. diminuta)* (ATCC 19146) and *Pseudomonas aeruginosa (Ps. aeruginosa)* at a concentration of 10^7 CFU/cm^2 or greater.

Filter housings

A range of filter housings is available to meet the needs of the food and 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 help maximize corrosion resistance.

Operating parameters and specifications

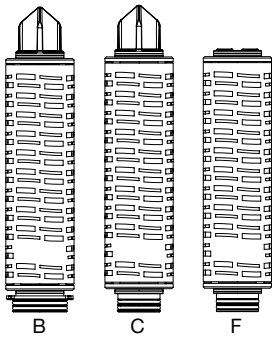
Materials of construction	
Membrane	Polyethersulfone (PES)
Media support layers	Polypropylene
Inner core, outer cage, end cap adapters	Polypropylene
Gasket and O-ring options	Various polymers available
Adapter reinforcing ring	Encapsulated polysulfone
Operating conditions	
Typical water flow rate at 77°F (25°C)	3.1 gpm (17 lpm) per 10 in (254 mm) cartridge
Maximum forward pressure differential	80 psid @ 77°F (5.5 bar @ 25°C) 25 psid @ 176°F (1.7 bar @ 80°C)
Maximum hot water sanitizing temperature	Hot water: 194ºF (90ºC) - 75 hrs 1 gpm (3.8 lpm), 10 psi (0.69 bar)
Steam sterilization	266ºF (130ºC) - 150, 30-minute cycles
NaOH cleaning	1M Conc. @ 149ºF (65ºC) - 100 hrs
Peroxyacetic acid sanitizing (27% hydrogen peroxide, 5.0% peracetic acid)	1% Conc. @ 77ºF (25ºC) - 100 hrs
Cartridge dimensions	
Filtration surface area	8.5 ft^2 (0.79 m^2)
Outer diameter	2.75 in (70 mm)
Nominal length	10 in (254 mm), 20 in (508 mm), 30 in (762 mm), 40 in (1016 mm)
Integrity test conditions	
Forward flow test pressure	35 psi (2.41 bar)
Maximum diffusion (10 in (254 mm) element)	51 sccm
Pressure hold test	Consult Filtration and Separation representative

Ordering Guides

LifeASSURE BNA020 filters

Cartridge grade	Configuration	Length (inches)	End modification	Gasket/O-ring material	Adaptor insert
BNA020	B	01 / 10 in 02 / 20 in 03 / 30 in 04 / 40 in	B - 226 O-ring & spear C - 222 O-ring & spear F - 222 O-ring & spear	A - Silicone B - Fluorocarbon C - EPR	Embedded polysulfone

Please note: The ordering guide above is for reference only.
Not all combinations are available.
Please consult with your Thermo Fisher Scientific representative to determine the appropriate part number for your application.



Thermo Scientific™ LifeASSURE™ BNA020 Media Disks

Part Number	Size (mm)	Quantity	Packaging
NM04708BNA020	47	40	box

IBWA
INTERNATIONAL BOTTLED WATER ASSOCIATION
An IBWA Bottler (Supplier) Member

Intended Use: LifeASSURE BNA filter products are intended and are compliant for use in Food and Beverage filtration applications of aqueous and non-aqueous fluids in accordance with the product instructions, specifications and where materials of construction are compatible. For specific details regarding use or limitations for food contact applications please contact your Thermo Fisher Scientific Inc. representative for more information.

Since there are many factors that can affect a product's use, the customer and user remain responsible for determining whether the Thermo Scientific product is suitable and appropriate for the user's specific application, including user risk assessments and evaluation of the Thermo Scientific product in the user's application.

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