ThermoFisher SCIENTIFIC



Industrial filtration

LifeASSURE BNA045 and BNA065 filter cartridges

thermo scientific

Filter cartridges for beverage microbiological stability

Thermo Scientific™ LifeASSURE™ BNA Filter Cartridges employ a highly-asymmetric polyethersulfone (PES) membrane that delivers excellent spoilage microorganism retention while greatly minimizing any organoleptic interference. This durable membrane/cartridge design withstands repeated exposure to hot water sanitation and steam sterilization as well as common chemical cleaning and sanitizing agents.

Complementing this high-performance membrane are Advanced Pleat Technology (APT) design and an upstream and downstream support design. All three work in concert to provide an increased flow rate at a lower pressure drop, resulting in smaller filter cartridge assemblies with extended service life and a lower overall operational costs.



Features and benefits

Features	Benefits
Highly asymmetric PES membrane	• Longer service life than competitive filter cartridges • Lower operating costs than competitive filter cartridges
High spoilage organism retention	• Reliable microbiological control • Performance matched to industry standards
Advanced Pleat Technology (APT)	• Increased accessible surface area • Longer service life than competitive filter cartridges • Lower operating costs than competitive filter cartridges
Upstream/ downstream supports	• Increased flow per cartridge • Reduced housing costs
Broad chemical compatibility	• Stable with most cleaning and sanitization regimes
Food contact compliance	Certain LifeASSURE BNA filter cartridge 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

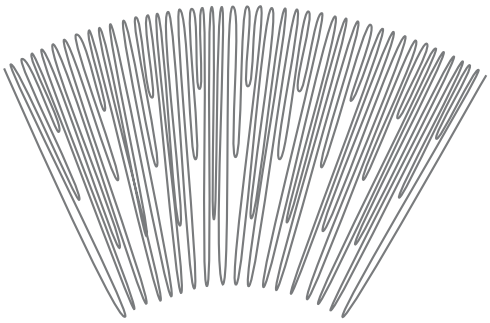
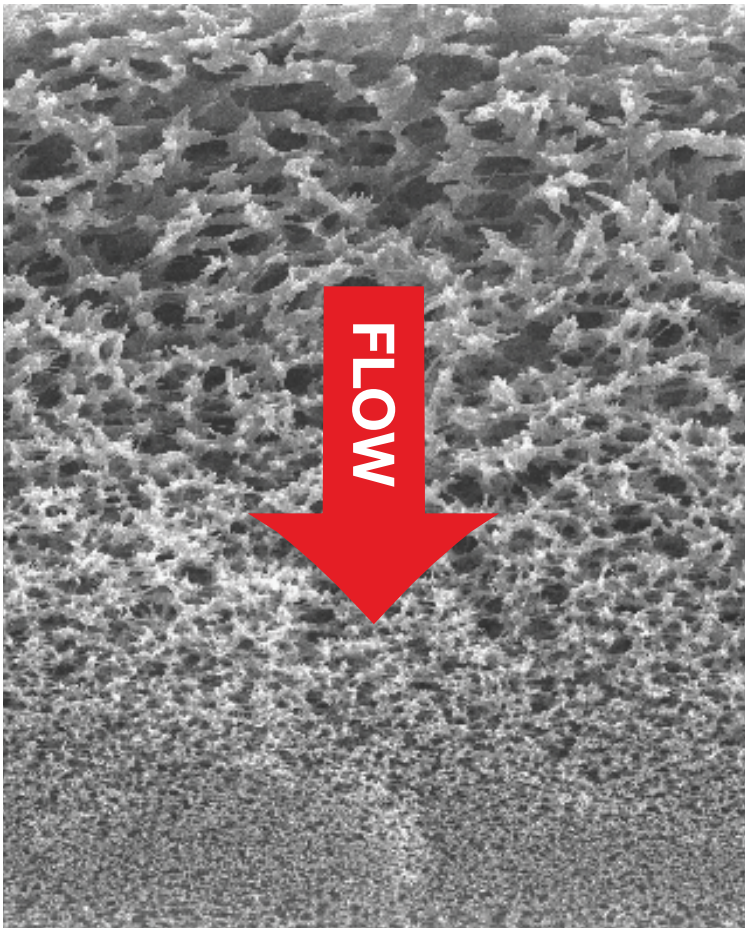


Figure 1. Advanced Pleat Technology



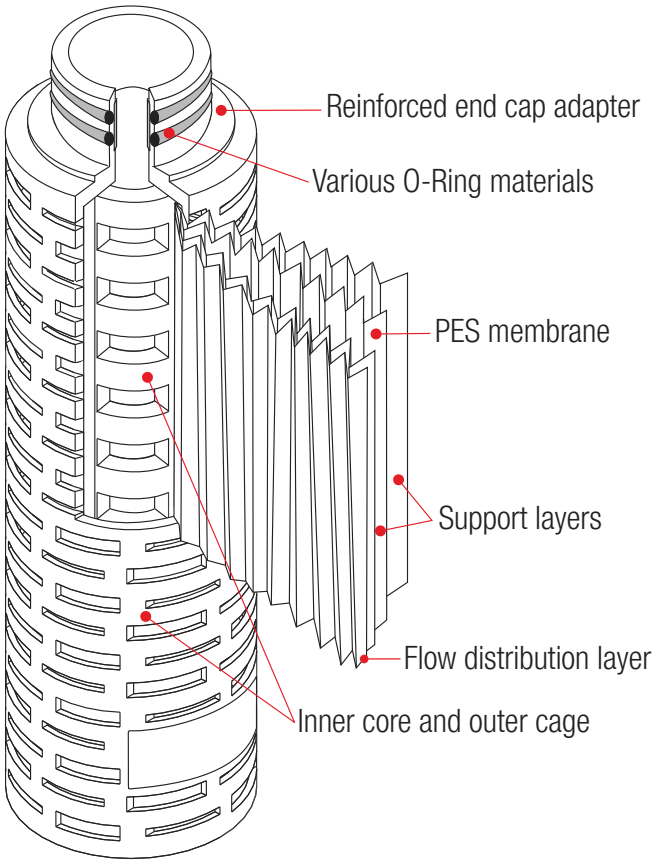


Figure 2. SEM of LifeASSURE BNA filter cartridge

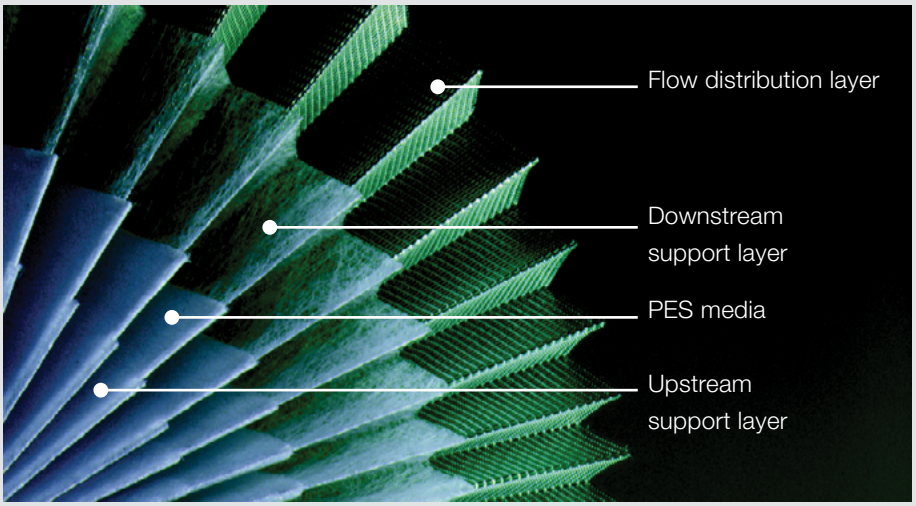


Figure 3. LifeASSURE BNA filter cartridge support design

Reliable microbiological control

Thermo Scientific™ LifeASSURE™ BNA 0.45 µm and 0.65 µm rated filter cartridges provide superior retention of common spoilage microorganisms, even at challenge concentrations that far exceed those experienced by most beverage producers (typically 1,000,000 to 10,000,000 cells per cm^2 of membrane area).

LifeASSURE BNA	Microorganism	Typical Log Reduction Value (LRV)
BNA045	*Serratia marcescens*	8
BNA045	*Oenococcus oeni*	9
BNA045	*Lactobacillus brevis*	10
BNA045	*Dekkera intermedia*	9
BNA065	*Lactobacillus brevis*	7
BNA065	*Dekkera intermedia*	9

Log Reduction Values are calculated using the following formula:

$$\text{LRV} = \log_{10}\left(\frac{\text{total number of organisms entering the filter cartridge}}{\text{total number of organisms exiting the filter cartridge}}\right)$$

Fast flow rates at low pressure drop

Thermo Fisher has combined three key technological advances to provide the fastest flow rate per unit of pressure drop. These three technologies, a highly asymmetric microporous membrane, Advanced Pleat Technology (APT) design, and an upstream and downstream support design, afford users with faster process flow rates using fewer filter cartridges.

Durable design

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

LifeASSURE BNA filter cartridge construction

LifeASSURE BNA filter cartridges are constructed of single-layer, highly asymmetric, polyethersulfone (PES) microporous membrane pleated with polypropylene upstream and downstream support materials. The outer cage, inner core and reinforced end-cap adapters are made of polypropylene. Multiple length filter cartridges, with industry standard connection styles, are produced to fit the most widely used housing designs and system sizes. No resin or binder compounds are added. All materials used in manufacturing are traceable and are approved for indirect food contact. Filter cartridges are manufactured under an ISO 9001:2015 certified quality system using the most advanced thermoplastic welding techniques for filter cartridge integrity. LifeASSURE BNA filter cartridges are 100% integrity tested after manufacture to verify quality.

Materials of construction	
Membrane	Polyethersulfone
Support layers	Polypropylene
Inner core, outer cage, end caps	Polypropylene
End cap adapter	Polypropylene with embedded polysulfone insert or stainless steel reinforcing ring
O-rings	Various

Nominal filter cartridge dimensions	
Effective Filtration Area (EFA)	8.5 ft^2 (0.79 m^2)
Filter cartridge diameter	2.75 in (70 mm)
Filter cartridge lengths	10 in (254 mm), 20 in (508 mm), 30 in (762 mm), 40 in (1016 mm)
Operating parameters	
Recommended flow rate (10 in (254 mm) element)	Wine: 2 - 3 gpm (7.6 - 11.4 lpm) Maximum: 9 gpm (34 lpm)
Max. differential pressure (forward)	80 psid @ 77°F (5.5 bar @ 25°C) 35 psid @ 194°F (2.4 bar @ 90°C)
Max. hot water sanitization temperature	194°F (90°C) - 150, 30 minute cycles
Max. steam sterilization temperature	275°F (135°C) - 75, 30 minute cycles
NaOH cleaning duration	1M Conc. at 149°F (65°C) - 100 hours
Peroxyacetic acid sanitizing (25% hydrogen peroxide, 5.0% peracetic acid)	1% Conc. at 77°F (25°C) - 100 hours

	BNA045 (0.45 µm)	BNA065 (0.65 µm)
Forward flow test pressure	22 psi (1.5 bar)	15 psi (1.0 bar)
Max. diffusion (10 in (254 mm) element)	≤35 cc/min	≤25 cc/min
Minimum bubble point	≥24 psi (1.7 bar)	≥17 psi (1.2 bar)
Pressure hold test	Consult Thermo Fisher Scientific	Consult Thermo Fisher Scientific

Integrity testing parameters

The Integrity Test is a non-destructive test that can be performed by the user to make sure the filter cartridge is installed correctly and ready for operation. LifeASSURE BNA filter cartridges can be Integrity Tested either manually, or with an automated integrity tester, by one of three methods: the Forward Flow Test, the Bubble Point Test, or the Pressure Hold Test. Refer to Technical Brief 70-2016-0416-5 for additional information on integrity testing parameters and specifications. Refer to Technical Brief 70-2016-0417-3 for additional information on cleaning, sanitization, sterilizing parameters, and specifications.

Thermo Scientific filter cartridge housings

A specialized range of filter housings are available to meet the needs of the food and beverage industry. The housings provide easy access for filter cartridge change-out and confidence that LifeASSURE BNA filter cartridges are sealed securely to avoid the possibility of fluid bypass. All housings are constructed using 316L stainless steel to maximize corrosion resistance. Thermo Fisher also offers custom-design, fully automated filtration skids and mobile units.

Ordering Guide

LifeASSURE BNA filter cartridges ordering guide

Cartridge grade	Removal rating (µm)	Configuration	Length (inches)	End modification	Gasket/O-ring material	Adaptor insert
BNA	045 - 0.45 065 - 0.65	F - APT Pleat	01 / 10 in 02 / 20 in 03 / 30 in 04 / 40 in	B - 226 O-ring and spear C - 222 O-ring and spear F - 222 O-ring and spear	A - Silicone C - EPR	(blank) - Embedded polysulfone insert 2 - Stainless steel ring

Example: The part number for a 30-inch LifeASSURE BNA filter cartridge, 0.45 µm retention rating, 226 silicone O-ring connector with locating spear, SS insert, would be: BNA045F03BA2.
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.

Intended Use: LifeASSURE BNA filter cartridge products are intended for use in industrial and 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.

Certain LifeASSURE BNA filter cartridge products are compliant for use in Food and Beverage applications. 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 conducting an appropriate risk assessment and evaluating the Thermo Scientific product in the user's application.

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