LENNTECH
info@lenntech.com Tel. +31-152-610-900
www.lenntech.com Fax. +31-152-616-289

3M™ Series NB Filter Bags

For liquid filtration

Customers have relied on 3M Purification, formerly known as CUNO, to provide quality filtration solutions for the most demanding applications. Leveraging 3M innovation, 3M Purification has applied this expertise in developing a product line for those applications where nominal bag filtration provides the most economical solution.

For some applications, liquid bags represent the best filtration option. Attractive features of liquid bag filters include:

- Inside-Outside Flow Configuration - resulting in capture of contaminants on the inside
- Ease of Disposal - bags are collapsible
- Ability to handle viscous fluids
- Low unit cost

Improved Bag Design from the Leader in Liquid Filtration

3M Purification's filter bag offering includes polypropylene and polyester felt and nylon monofilament materials in a wide range of grades (removal ratings).

Not all liquid bag filters are created alike. 3M Purification designed and manufactured bag filters offer following important features.

Predictable Removal Efficiencies

Through controlled media specifications and advanced manufacturing processes.

Media Migration Control (felt materials)

Through thermal treatment of the exterior filter media and the use of state-of-the-art procedures to properly weld the media seams and the media to the collar.

Proper Sealing for Control of Fluid Bypass

Using a specially designed plastic sealing collar (for felt materials), proper seating of the filter bag into the bag housing is obtained controlling fluid bypass and contamination of the downstream fluid with previously removed particles.

3M Purification's unmatched filtration media development capabilities and advanced manufacturing processes allows for cost effective manufacturing of high quality filtration products meeting the most demanding customer specifications. The quality management system associated with the manufacturing of the 3M™ NB Series filter bags is ISO certification.

3M Purification's sales support teams are dedicated to working with you to identify the optimum liquid filter product for your application. With 3M Purification's complete line of filter product solutions, you can be sure that you are getting the best filter solution for your application.

For new installations, 3M Purification offers a full line of bag filter housings, contact your local 3M sales representative for 3M Purification for more details.

Applications

3M Purification liquid bag filters are appropriate for use in a wide range of markets and applications, including:

- **Industrial**
- **Coatings**
- **Chemicals**
- **Hydrocarbon & Refining**
- **Food & Beverage (PPS bags only)**
- **Electronics**
- **Pharmaceutical & Healthcare**

Table 1: Felt Bag Filter Element Specifications		
Dimension	Felt Filter Bags	
	#1 Size	#2 Size
Nominal Removal Ratings (microns)	1, 5, 10, 25, 50, 100 and 200	
Filter Diameter (cm)	17.8	
Filter Length (cm)	43.2	81.3

Table 2: Felt Filter Media Chemical Compatibility*		
Chemical	Compatibility Rating	
	polypropylene	polyester
Strong acids	Excellent	Good
Weak acids	Excellent	Excellent
Strong alkalis	Excellent	Poor
Weak alkalis	Excellent	Fair
Solvents	Fair	Good

* Thermal and chemical resistance data presented in this brochure is for guidance only. Factors such as duration, degree of concentration of a substance in a fluid and temperature should also be considered.

3M™ NB Series polypropylene and polyester felt filter bags

For many liquid bag filtration applications, the use of polypropylene or polyester felt materials represents the most economical filtration solution. These materials are compatible with a wide range of fluids and operating conditions (see tables 2 and 3).

For these applications, 3M Purification offers a line of Size #1 and #2 felt filter bags in both all polypropylene and all polyester materials (media and collar) in grades ranging from 1 to 200 µm.

Materials/Construction

Each 3M Purification felt bag filter grade is manufactured from high performance fibres selected based on extensive media performance testing. No adhesives, binders or silicone are used in the media manufacturing process. For control of fibre migration and subsequent downstream contamination, bag filter side seams are welded and the exterior surfaces thermally treated.

Sealing

All 3M Purification felt filter bags come standard with a unique plastic collar, of the same material as the media, for proper sealing into the bag housing. Utilising the latest technology, the bag filter media is welded to the collar preventing problems associated with stitched collars. The collar includes an ergonomically designed handle to allow for easy removal of the bag filter. For ease of identification and traceability, the handles include an engraved tab providing grade and lot information.

Table 3: Operating Parameters				
Operating conditions	Polypropylene		Polyester	
	#1 Size	#2 Size	#1 Size	#2 Size
Maximum Operating Temperature	82 °C		149 °C	
Maximum Recommended Flow Rate*	340 l/min	681 l/min	340 l/min	681 l/min
Maximum Forward Differential Pressure	2.4 bar at 20 °C			
Recommended Change-out Differential Pressure	1.4 bar			
Regulatory Compliance				
3M™ Series NB polypropylene PPS filter bags comply with the requirements of Regulation (EC) 1935/2004 for their intended food contact applications. The polypropylene materials are listed in the FDA CFR Title 21 section 177.1520. Contact 3M Purification for further information.				
* For aqueous solutions based on maintaining clean pressure drop (media only) of ≤ 0.14 bar.				

Features and Benefits

Controlled media specifications
- Predictable performance for desired filter effluent quality
- Manufacturing processes do not use silicone or adhesives

Specially designed sealing collar
- Control of fluid bypass through proper sealing into most filter bag manufacturer's housings
- Ergonomically designed handle for ease of bag removal
- Grade and lot information etched on collar for identification and traceability

Welded side seams and thermal treated exterior surfaces
- Control of fibre migration and subsequent downstream fluid contamination

Approved for food contact use (PPS Elements only)
- Complies with European and US regulations

3M™ NB Series nylon monofilament filter bags

For some liquid bag applications, the use of nylon monofilament (NMO) materials represents a better option than conventional felt materials. These include applications benefitting from the following features.

- **Consistent pore size**: the uniform openings of monofilament bags make their use ideal in applications where it is desired that certain size particles in the incoming fluid pass through the filter (i.e. metallic paints…) while reliably removing larger undesirable particles.
- **High strength construction**: since each thread is a single filament, monofilament bags have excellent strength reducing the possibility of bag rupture and subsequent downstream fluid contamination.
- **High temperature/alkali compatibility**: this makes the filters an appropriate choice for high temperature cleaning applications.

For these applications, 3M Purification offers a line of Size #1 and #2 nylon monofilament (NMO) bag filters in grades ranging from 25 to 1200 µm.

Materials/Construction

Each 3M Purification NMO bag filter grade is manufactured from industry proven and accepted monofilament fibres. No adhesives or binders are used in the media manufacturing process. NMO bag filters are compatible with a wide range of fluids and operating conditions (see Tables 4 and 5).

Sealing

All 3M Purification NMO bags come standard with a galvanised metal ring for sealing into the bag housing. To address potential fluid bypass, care is taken in the manufacturing process to fasten the filter media to the ring for effective sealing in major manufacturers' bag housings. For ease of removal from the filter bag vessel, a strap is affixed to the filter. For identification and traceability, grade and lot information is included on a perforated tag.

Table 4: NMO Chemical Compatibility*

Chemical	Compatibility Rating
Strong Acids	Poor
Weak Acids	Fair
Strong Alkalis	Excellent
Weak Alkalis	Excellent
Solvents	Good

*Thermal and chemical resistance data presented in this brochure is for guidance only. Factors such as duration, degree of concentration of a substance in a fluid and temperature should also be considered.

Table 5: NMO Specifications and Operating Conditions

Dimension	Nylon Monofilament Bag Filters	
	#1 Size	#2 Size
Nominal Removal Ratings (microns)	25, 50, 100, 150, 200, 250, 400, 600, 800 & 1200	
Filter Diameter (cm)	17.8	
Maximum Recommended Flow Rate*	340 l/min	681 l/min
Maximum Operating Temperature	149 °C	
Maximum Forward Differential Pressure	2.4 bar at 20°C	
Recommended Change-out Differential Pressure	1.4 bar	

* For aqueous solutions based on maintaining clean pressure drop (media only) of ≤ 0.14 bar.

Features and Benefits

Uniform pore sizing
- Allows desired undersized particles to pass through (metallic paints…)
- Effective removal of oversized contaminants

Continuous fibre construction
- High fibre strength reducing the likelihood of bag rupture and downstream fluid contamination

High temperature/alkali compatibility
- Appropriate choice for filtration of high temperature cleaning solutions

Available in coarser grades (> 200 µm)
- Cost effective filtration solution for those applications requiring removal of coarse particles only

3M™ Series NB Filter Bags

3M™ NB Series polypropylene & polyester felt filter bag - Ordering guide

Filter Designation	Nominal Removal Rating	Material (Media/Plastic Components)	Bag Size	Collar Type
NB - nominal bag	**0001** - 1 µm **0005** - 5 µm **0010** - 10 µm **0025** - 25 µm **0050** - 50 µm **0100** - 100 µm **0200** - 200 µm	**PPS** - polypropylene/polypropylene **EES** - polyester/polyester	**1** - size #1 **2** - size #2	**C** - plastic collar

3M™ NB Series nylon monofilament filter bag - Ordering guide

Filter Designation	Nominal Removal Rating	Material (Media/ Plastic Components)	Bag Size	Collar Type
NB - nominal bag	**0025** - 25 µm **0050** - 50 µm **0100** - 100 µm **0150** - 150 µm **0200** - 200 µm **0250** - 250 µm **0400** - 400 µm **0600** - 600 µm **0800** - 800 µm **1200** - 1200 µm	**NYS** - nylon monofilament	**1** - size #1 **2** - size #2	**R** - metal ring

3M™ NB Bags is the new name for CUNO Nominal Bags.

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