

Laboratory products catalog.



# Ahlstrom is a well-known brand in the scientific community.

We are a high performance materials company, partnering with leading businesses around the world to help them stay ahead. Our products are used in a large variety of everyday applications, such as filters, wallcovers, beverages and labels. In laboratories, we are known and recognized for providing superior service, reliability and high quality products.

Ahlstrom acquired Sweden-based Munktell Filter AB and its holdings in Munktell & Filtrak GmbH, Filtres Fioroni SA, and Munktell Inc in October 2012. Through the transaction, Ahlstrom has strengthened our product portfolio in advanced filtration materials.

Ahlstrom offers equivalent products to many of the filter paper grades offered by Munktell. Our recommended equivalent is shown in the cross reference guide. Some Munktell paper grades are now also being offered by Ahlstrom. The page on which they appear is indicated in the table on page 4.

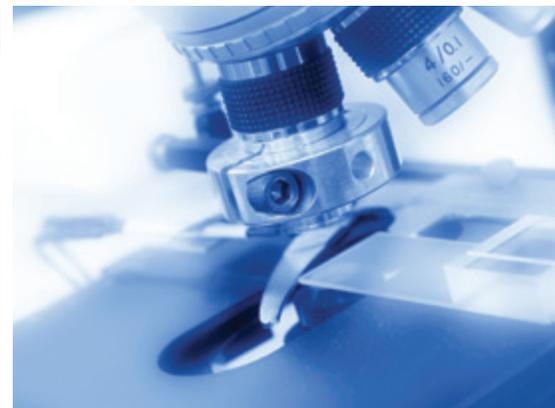
Additional Munktell paper grades may be available for special orders. Please contact customer service for details.

## Custom Order and Product Development

Ahlstrom is recognized worldwide as a leading custom manufacturer and converter of filtration, absorbent and specialized web materials. Ahlstrom's technical staff will work with your research and development department to determine specific product needs and specifications. Products listed in this catalog represent the grades and sizes most commonly used in the laboratory market. Most Ahlstrom papers can be supplied in special sheet, roll or die-cut sizes. To obtain information on other sizes and grades, please contact your local distributor or Ahlstrom.

## Samples

Product samples are available, upon request, to assist you in determining the Ahlstrom grade that is most suited to your application. Please contact your local distributor or Ahlstrom Customer Service Department to obtain samples.





## Distribution

Ahlstrom products are available from a worldwide distributor network, carefully selected for their product knowledge and ability to provide you with the most efficient service possible. Our representatives can provide you with a comprehensive offering of Ahlstrom products. Ahlstrom customer service and technical service is also available to provide any information or assistance you may require.

## Satisfaction Guaranteed

If you are dissatisfied with any grades, Ahlstrom will gladly work with you to attempt to solve your problem. If there is a quality issue with a product purchased within the past six months, and we fail to provide a solution, Ahlstrom will either send you a product replacement or issue a credit.

## Quality

Ahlstrom's continued commitment to our customers is supported through registered adherence to ISO 9001 standards.

## Technical Information

This catalog provides current and detailed technical information on the full line of scientific products manufactured and converted by Ahlstrom. It includes analytical filter papers; glass microfiber filters used in the laboratory; chromatography, electrophoresis and blotting grades; extraction thimbles; membranes and syringe filters for microfiltration; and several specialty products made for specialized applications.

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## Ahlstrom – Munktell cross reference guide and index

Munktell Grade	Ahlstrom Grade
006	94
00A	74
00H	94
00K	74
00M	54
00R	54
no. 1	601
1F	601
no. 2	642
2CT	page 26
3	631
3 m/N	613
37/N	961
39/N	963
3hw	613
3m/N	613
3S/H	237
4b	613
6	962
6 S/N	961
17	961
41b	962
55/N	962
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120H	610
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195	8001
196	8002
292	601
293	610
388	55
389	55
390	75
391	95
392	75

Munktell Grade	Ahlstrom Grade
393	95
480	page 14
601/N	909
1001	950
1002	909
1003	631
1288	631
1289	909
1290	950
1291	950
1293	610
1357	4002
1765	page 14–15
1766	page 14–15
BF1	601
BF2	238
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C450	270
ET/401	7100
ET/MG160	page 24–25
ET/MK360	page 24–25
FN1	631
FN2	631
FN3	601
FN4	642
FN5	610
FN6	642
FN7a	237
FN8	222
FN30	243
FN100	238
Labsorb	Polysield
MG 550-HA	169
MGA	111
MGB	121
MGC	131
MGD	141
MGF	151
MK360	page 18

\*The comparative data included herein is based on publicly available information and/or Ahlstrom's analysis and THE COMPARATIVE GRADES ARE NOT REPRESENTED OR WARRANTED TO BE EXACT FUNCTIONAL OR PERFORMANCE EQUIVALENTS. All users must make their own comparisons and determinations as to the suitability of any products for their intended end-use.



# Qualitative Filter Papers

Ahlstrom's qualitative grades of filter paper are, by definition, recommended for use in analytical methods, which determine or identify particulate constituents of a mixture irrespective of the amount present. Qualitative filter papers are often used in routine separation work that still requires high purity and consistent performance.



## Key features

- Qualitative analysis
- Low ash content 0.06%
- Untreated
- Consistent performance
- Wet-strengthened grades available
- Custom cut
- Bulk packaging

Ahlstrom offers a complete range of low ash filter papers for general laboratory work that provides you with the correct combination of particle retention, filtration speed, loading capacity and wet-strength. All our qualitative grades consist of > 95% super refined  $\alpha$ -cellulose and linter fibers.

## Standard Grades (Non Wet-Strengthened)

Standard qualitative filter papers are suitable for quadrant folded or gravity flow applications. These grades contain a high level of alpha-cellulose that provides high purity but will weaken when wet. The inherent strength of standard (untreated) grades does not pose a problem when they are used in routine quadrant folded applications. We do not recommend these grades for use in vacuum work or when wet handling is required.

### Ahlstrom 610: 1.5 $\mu$ m – Slow Speed

This grade is a slow flowing filter designed to retain fine particles encountered in qualitative analysis. Ahlstrom 610 is widely used for water analysis, biological products and fine precipitates such as cold-precipitated barium sulfate. Ahlstrom 610 is also used in Buchner funnels and to clarify cloudy suspensions.

### Ahlstrom 642: 2 $\mu$ m – Medium Speed

This grade has finer particle retention than Ahlstrom 601 but with slightly lower filtration speed. Ahlstrom 642 also has higher absorption than Ahlstrom 601. It is used in general laboratory applications to retain particles above 2  $\mu$ m in size. Ahlstrom 642 is also found in agricultural and environmental laboratories for plant growth trials, soil testing, and air analysis for monitoring specific contaminants and in the filtration of organic and sulfide precipitates.

### Ahlstrom 601: 2.5 $\mu$ m – Medium Speed

This grade covers a wide range of laboratory applications and is used for clarifying liquids and for rapid filtration of coarser precipitates such as lead sulfate, lead chromate, calcium oxalate, calcium carbonate, aluminum phosphate, barium carbonate and beryllium hydroxide. Ahlstrom 601 can be found in soil analysis, seed testing and in air pollution to collect dust-laden air and is also commonly used in the food industry to separate foodstuffs from associated liquid or extracting liquid.

## Non Wet-Strengthened Grades (Continued)

### Ahlstrom 237: 3µm – Medium Speed

This high absorbency grade is twice as thick as grade 642 with similar particle retention. The superior absorbency offers excellent performance when used as a sample carrier. The extra thickness gives higher wet strength and loading capacity, enabling more precipitate to be held without clogging the filter. Ahlstrom 237 is also highly suitable for use in Buchner funnels and for dye filtration.

### Ahlstrom 609: 4µm – Medium Speed

This grade is an evolution of Ahlstrom 613 for use in the beer industry. This is a filter paper with an extremely low iron and nitrogen content for the analysis of protein in beer.

### Ahlstrom 613: 6µm – Medium Speed

This is a strong filter paper with a medium flow rate and retention. Ahlstrom 613 is commonly used in student laboratories. This strong general-purpose filter is also useful in Buchner funnels for barium carbonate, lead chromate and beryllium hydroxides.

### Ahlstrom 631: 10µm – Medium Speed

This grade is used for the filtration of coarse particles and gelatinous precipitates such as ferric aluminum and magnesium hydroxides. Ahlstrom 631 is used in air monitoring and gas filtration when high flow rate is needed. This grade is also found in routine cleanup analysis of insoluble liquids such as biological fluids and organic elements.

### Ahlstrom 615: 25µm – Fast Speed

This fast filtering grade is an intermediate grade between Ahlstrom 617 and Ahlstrom 631. Ahlstrom 615 has a rough surface and is used for filtering aluminum, ferric and magnesium hydroxides. It is also found in general construction filtration work and in the filtration of insoluble iron and ore.

### Ahlstrom 617: 35µm – Fast Speed

This is an extremely fast filtering grade and has a larger particle retention than Ahlstrom 631. Ahlstrom 617, a thicker filter paper with higher loading capacity, is used for rapid filtration of coarse particles and gelatinous precipitates such as in oils and resin solutions. Ahlstrom 617 is also found in construction product testing and is used by students to retain large flocculents and precipitates.

## Typical grade properties

Standard Grades	Retention in µm	Filtration Speed punch Herzberg sec/100mls	Filtration Speed Rapidity mls/min	Loading Capacity	Whatman Cross Reference
610	1.5	1724	4	Medium	5
642	2.0	229	30	Medium	2
601	2.5	124	55	Medium	1
237	3.0	114	60	Very High	3
609	4.0	98	70	Medium	—
613	6.0	114	60	Medium	Student Grade
631	10.0	34	200	High	4
615	25.0	29	235	High	—
617	35.0	19	360	Very High	—

## Catalog numbers (100/box; items with grade numbers in bold are 50/box)

\*All circle diameters are in centimeters

Size*	237	601	609	610	613	615	617	631	642
2.5	2370-0250	6010-0250	6090-0250	6100-0250	6130-0250	6150-0250	<b>6170-0250</b>	6310-0250	6420-0250
4.25	<b>2370-0425</b>	6010-0425	6090-0425	6100-0425	6130-0425	6150-0425	<b>6170-0425</b>	6310-0425	6420-0425
4.7	<b>2370-0470</b>	6010-0470	6090-0470	6100-0470	6130-0470	6150-0470	<b>6170-0470</b>	6310-0470	6420-0470
5.5	<b>2370-0550</b>	6010-0550	6090-0550	6100-0550	6130-0550	6150-0550	<b>6170-0550</b>	6310-0550	6420-0550
7.0	<b>2370-0700</b>	6010-0700	6090-0700	6100-0700	6130-0700	6150-0700	<b>6170-0700</b>	6310-0770	6420-0700
9.0	<b>2370-0900</b>	6010-0900	6090-0900	6100-0900	6130-0900	6150-0950	<b>6170-0900</b>	6310-0900	6420-0900
11.0	<b>2370-1100</b>	6010-1100	6090-1100	6100-1100	6130-1100	6150-1100	<b>6170-1100</b>	6310-1100	6420-1100
12.5	<b>2370-1250</b>	6010-1250	6090-1250	6100-1250	6130-1250	6150-1250	<b>6170-1250</b>	6310-1250	6420-1250
15.0	<b>2370-1500</b>	6010-1500	6090-1500	6100-1500	6130-1500	6150-1500	<b>6170-1500</b>	6310-1500	6420-1500
18.5	<b>2370-1850</b>	6010-1850	6090-1850	6100-1850	6130-1850	6150-1850	<b>6170-1850</b>	6310-1850	6420-185
20.5	<b>2370-2050</b>	6010-2050	6090-2050	6100-2050	6130-2050	6150-2050	<b>6170-2050</b>	6310-2050	6420-2050
24.0	<b>2370-2400</b>	6010-2400	6090-2400	6100-2400	6130-2400	6150-2400	<b>6170-2400</b>	6310-2400	6420-2400
27.0	<b>2370-2700</b>	6010-2700	6090-2700	6100-2700	6130-2700	6150-0270	<b>6170-2700</b>	6310-2700	6420-2700
32.0	<b>2370-3200</b>	6010-3200	6090-3200	6100-3200	6130-3200	6150-3200	<b>6170-3200</b>	6310-3200	6420-3200
38.5	<b>2370-3850</b>	6010-3850	6090-3850	6100-3850	6130-3850	6150-3850	<b>6170-3850</b>	6310-3850	6420-3850
40.0	<b>2370-4000</b>	6010-4000	6090-4000	6100-4000	6130-4000	6150-4000	<b>6170-4000</b>	6310-4000	6420-4000
45.0	<b>2370-4500</b>	6010-4500	6090-4500	6100-4500	6130-4500	6150-4500	<b>6170-4500</b>	6310-4500	6420-4500
50.0	<b>2370-5000</b>	6010-5000	6090-5000	6100-5000	6130-5000	6150-5000	<b>6170-5000</b>	6310-5000	6420-5000

## Wet-Strengthened Grades

### Ahlstrom 950: 2.0µm – Slow Speed

This slow flow rate grade with very good retention is used in the filtration of fine precipitates and super phosphates. Ahlstrom 950 is also recommended for boiler water analysis applications and gas filtration.

### Ahlstrom 909: 3.0µm – Medium Speed

This medium flow rate grade with very good retention is a tighter version of Ahlstrom 962. This grade has a rough surface and is often found in the food industry for routine tests.

### Ahlstrom 962: 27µm – Fast Speed

This fast filtering grade is a thinner version of Ahlstrom 961. Ahlstrom 962 is recommended for the filtration of coarse and gelatinous precipitates. The creped surface of Ahlstrom 962 also offers higher surface area to maintain high filtration speed.

### Ahlstrom 961: 40µm – Fast Speed

This fast filtering grade, with extremely high loading capacity, is recommended for the filtration of coarse and gelatinous precipitates. The creped surface of Ahlstrom 961 also offers higher surface area to increase filtration speed.

## Typical grade properties

Wet-Strength Grades	Retention in µm	Filtration Speed Herzberg sec/100mls	Filtration Speed Rapidity ml/min	Loading Capacity	Whatman Cross Reference
950	2.0	491	14	Medium	6
909	3.0	105	65	Medium	91
962	27.0	28	245	High	114
961	40.0	19	360	Very High	113

## Catalog numbers (100/box; items with grade numbers in bold are 50/box)

\*All circle diameters are in centimeters

Size*	950	909	962	961
4.25	9500-0425	9090-0425	9620-0425	9610-0425
4.7	9500-0470	9090-0470	9620-0470	9610-0470
5.5	9500-0550	9090-0550	9620-0550	9610-0550
7.0	9500-0700	9090-0700	9620-0700	9610-0700
9.0	9500-0900	9090-0900	9620-0900	9610-0900
11.0	9500-1100	9090-1100	9620-1100	9610-1100
12.5	9500-1250	9090-1250	9620-1250	9610-1250
15.0	9500-1500	9090-1500	9620-1500	9610-1500
18.5	9500-1850	9090-1850	9620-1850	9610-1850
20.5	9500-2050	9090-2050	9620-2050	9610-2050
24.0	9500-2400	9090-2400	9620-2400	9610-2400
27.0	9500-2700	9090-2700	9620-2700	9610-2700
32.0	9500-3200	9090-3200	9620-3200	9610-3200
38.5	9500-3850	9090-3850	9620-3850	9610-3850
40.0	9500-4000	9090-4000	9620-4000	9610-4000
45.0	9500-4500	9090-4500	9620-4500	9610-4500
50.0	9500-5000	9090-5000	9620-5000	9610-5000

# Quantitative Filter Papers (Ashless)

Ahlstrom manufactures a series of extremely high purity, acid washed filter papers designed for use in analytical and gravimetric analysis. The quantitative grades are manufactured from top quality cotton linters using ultra-pure, reverse-osmosis water and are further treated with dilute acid to remove any remaining organic and inorganic impurities. All quantitative grades are manufactured in a strictly controlled environment that ensures high uniformity and high purity from filter to filter.

## Key features

- Quantitative analysis
- Low ash content 0.07% (Acid-wash treated)
- High wet-strength
- Consistent performance
- Hardened grades available
- Custom cut
- Bulk packaging



## Ashless Grades (Ash 0.007%)

These standard ashless grades are high purity filter papers suitable for routine quantitative gravimetric techniques and in the preparation of samples for use in analysis involving instrumental techniques.

### Ahlstrom 94: 1.5µm – Slow Speed

This is an extremely fine retention filter for critical gravimetric analysis of very fine particles such as barium and lead sulfates, stannic and nickel sulfide, calcium oxalate and calcium fluoride.

### Ahlstrom 74: 2.0µm – Medium Speed

This grade has medium flow rate and good particle retention and is the most commonly used acid-washed filter.

Ahlstrom 74 covers a wide range of general ashless filtration applications. It is used for gravimetric analysis of numerous components (e.g.: cements, copper, clay, bismuth, silicon, iron) found in heavy industries such as construction, mining or steel. Ahlstrom 74 is also used as a high purity filter for speedy filtering of trace elements such as silver chromate, lead sulfate, zinc and ammonium hydroxides. Ahlstrom 74 is also found in general soil analysis for separating solid from aqueous extracts.

### Ahlstrom 54: 10µm – Fast Speed

This is a fast filtering grade for rapid filtration of coarse particles and gelatinous precipitates such as iron, zirconium and aluminum hydroxides, and cobalt sulfide. Ahlstrom 54 is also used in air pollution testing to determine gaseous compounds. It is recommended for fast analysis procedures for unstable precipitates such as silicon, which requires speedy filtration.



## Hardened Ashless Grades (Ash 0.006%)

These specially treated hardened ashless grades are available for critical quantitative analytical techniques requiring increased wet-strength and handling capacity. These high purity filter papers have a tough, smooth surface free of loose fibers and are ideal for collecting wet precipitates. Each grade offers a convenient combination of particle retention and flow rate and are generally used because of their high chemical resistance to strong acid and alkali.

### Ahlstrom 95: 1.5µm – Slow Speed

This is an extremely fine retention filter for critical gravimetric analysis and metal determination of very fine particles such as barium and lead sulfates, stannic and nickel sulfide, calcium oxalate and calcium fluoride.

### Ahlstrom 75: 2.0µm – Medium Speed

This grade has medium flow rate and good particle retention and is most commonly used for applications requiring high chemical resistance to strong acid and alkali. Ahlstrom 75 is often used for filtering trace elements, collecting hydroxides after precipitation by strong alkalis and in the analysis of metals in acid and alkali solutions.

### Ahlstrom 55: 15µm – Fast Speed

This is a fast filtering grade for gravimetric analysis of coarse particles and gelatinous precipitates (i.e.: aluminum and zirconium hydroxides) in acid and alkali solutions. Ahlstrom 55 is also used in air and foodstuffs analysis and for chloride and phosphorous in cement, coal and coke.



### Typical grade properties

Grades	Retention in $\mu\text{m}$	Filtration Speed Herzberg sec/100mls	Filtration Speed Rapidity mls/min	Loading Capacity	Whatman Cross Reference
94	1.5	1724	4	Medium	42
74	2.0	229	30	Medium	40
54	10.0	34	200	Medium	41
95	1.5	458	15	Medium	542 and 50
75	2.0	149	45	Medium	540 and 52
55	15.0	31	220	Medium	541 and 54

### Catalog numbers (100 circles/box)

\*All circle diameters are in centimeters

Size*	54	55	74	75	94	95
4.25	0540-0425	0550-0425	0740-0425	0750-0425	0940-0425	0950-0425
5.5	0540-0550	0550-0550	0740-0550	0750-0550	0940-0550	0950-0550
7.0	0540-0700	0550-0700	0740-0700	0750-0700	0940-0700	0950-0700
9.0	0540-0900	0550-0900	0740-0900	0750-0900	0940-0900	0950-0900
11.0	0540-1100	0550-1100	0740-1100	0750-1100	0940-1100	0950-1100
12.5	0540-1250	0550-1250	0740-1250	0750-1250	0940-1250	0950-1250
15.0	0540-1500	0550-1500	0740-1500	0750-1500	0940-1500	0950-1500
18.5	0540-1850	0550-1850	0740-1850	0750-1850	0940-1850	0950-1850
24.0	0540-2400	0550-2400	0740-2400	0750-2400	0940-2400	0950-2400
27.0	0540-2700	0550-2700	0740-2700	0750-2700	0940-2700	0950-2700
32.0	0540-3200	0550-3200	0740-3200	0750-3200	0940-3200	0950-3200
40.0	0540-4000	0550-4000	0740-4000	0750-4000	0940-4000	0950-4000



# Specialty Analytical Filter Paper

Ahlstrom manufactures high quality analytical filter papers for use in specialty end use applications. These custom designed qualitative grades are manufactured from top quality cotton linters using ultra-pure, reverse-osmosis water. Ahlstrom specialty analytical filter papers include pleated and non-pleated grades and are found in applications such as seed, asphalt and beer testing. All grades are manufactured in a strictly controlled environment that ensures high uniformity and high purity from filter to filter.

## Key features

- Qualitative analysis
- Low ash content 0.06%
- Untreated
- Consistent performance
- Wet-strengthened grades available
- Custom designed for end-use application
- Custom cut
- Bulk packaging



## Pleated (Fluted) Filter Paper

Ahlstrom offers a full range of standard pleated grades that meet your needs from grades with rapid flow rates for filtration of viscous materials to grades with tight matrices for removal of fine precipitates. Ahlstrom's pre-pleated grades can save valuable time and maximize the efficiency of the laboratory filter system. Pleating improves the effective surface area increasing flow rate and loading capacity thus decreasing filtration time. Pleated circles are available in 12.5cm to 50cm diameters.

### Typical grade properties

Grades	Filter paper base	Retention in $\mu\text{m}$	Filtration Speed Herzberg sec/100mls	Filtration Speed Rapidity mls/min	Loading Capacity
542	642	2	229	30	Medium
550	950	2	491	14	Medium
519	909	3	105	65	Medium
509	609	4	85	80	Medium
513	613	6	114	60	Medium
515	615	25	29	235	High
562	962	27	28	245	High
505	905	28	26	265	Medium
517	617	35	19	360	Very High

### Catalog numbers Pleated (Fluted) Grades (100/box); items with grade numbers in bold are 50/box

\*All circle diameters are in centimeters

Size*	505	509	513	515	517	542	550	519	562
12.5	5050-1250	5090-1250	5130-1250	5150-1250	5170-1250	5420-1250	5500-1250	5190-1250	5620-1250
15.0	5050-1500	5090-1500	5130-1500	5150-1500	5170-1500	5420-1500	5500-1500	5190-1500	5620-1500
18.5	5050-1850	5090-1850	5130-1850	5150-1850	5170-1850	5420-1850	5500-1850	5190-1850	5620-1850
24.0	5050-2400	5090-2400	5130-2400	5150-2400	5170-2400	5420-2400	5500-2400	5190-2400	5620-2400
32.0	5050-3200	5090-3200	5130-3200	5150-3200	5170-3200	5420-3200	5500-3200	5190-3200	5620-3200
38.5	5050-3850	5090-3850	5130-3850	5150-3850	5170-3850	5420-3850	5500-3850	5190-3850	5620-3850
50.0	5050-5000	5090-5000	5130-5000	5150-5000	5170-5000	5420-5000	5500-5000	5190-5000	5620-5000

## Asphalt Testing Filter Paper

Ahlstrom manufactures a range of high purity analytical paper for use in asphalt testing. Grade 627 combines good retention (4  $\mu\text{m}$ ) with a moderate flow rate. Other grades commonly used for asphalt testing in extraction units include 613, 615 and 617. They are available in solid circles, circles with precut center holes, sheets and rolls. Sheets and circles are shrink-wrapped in packs of 100 for protection from moisture and dust.

### Typical grade properties

\*All grades available in custom cut dimension

Grades	Retention in $\mu\text{m}$	Filtration Speed Herzberg sec/100mls	Filtration Speed Rapidity mls/min	Loading Capacity
627*	4	80	85	High
613*	6	114	60	Medium
615*	25	29	235	High
617*	35	19	360	Very High

## Sugar Testing Filter Paper

Ahlstrom offers a full range of specially designed filter paper for use in the sugar industry. Ahlstrom 8613 has a smooth black finish designed for use in applications requiring visual examination of particles. Ahlstrom 613 and 615 are particularly well suited for general laboratory filtration methods and qualitative analysis.

### Typical grade properties

Grades	Retention in $\mu\text{m}$	Filtration Speed Herzberg sec/100mls	Filtration Speed Rapidity mls/min	Wet Burst Inches	Loading Capacity
8613	4	118	58	29	Medium
613	6	114	60	16	Medium
615	25	29	235	18	High
962	27	28	245	126	High
961	40	19	360	70	Very High

### Catalog numbers Sugar Testing Grades (8613 and 962: 100/pk; 961: 50/pk)

\*All circle diameters are in centimeters. Grade 613 and 615 catalog numbers are shown in the Qualitative Filter Paper section.

Size*	8613	962	961
2.4	8613-0240	9620-0240	9610-0240
3.0	8613-0300	9620-0300	9610-0300
4.25	8613-0425	9620-0425	9610-0425
4.7	8613-0470	9620-0470	9610-0470
5.5	8613-0550	9620-0550	9610-0550
7.0	8613-0700	9620-0700	9610-0700
9.0	8613-0900	9620-0900	9610-0900
11.0	8613-1100	9620-1100	9610-1100
12.5	8613-1250	9620-1250	9610-1250
15.0	8613-1500	9620-1500	9610-1500
18.5	8613-1850	9620-1850	9610-1850

## Beer Testing Filter Paper

Ahlstrom manufactures a full range of laboratory filter paper for use in the beer industry. Ahlstrom 642 is recommended for the WORT color test. Ahlstrom 515 is a pleated filter used in the SCABA analyzer, while Ahlstrom 509, also pleated, is used in the IBU test and in Malt-4 analysis and degassing. Ahlstrom 111, a 100% glass microfiber filter is also used in the beer industry to remove yeast cells before analysis (see glass microfiber section).

### Typical grade properties

\*All grades available in custom cut dimension

Grades	Retention in $\mu\text{m}$	Filtration Speed Herzberg sec/100mls	Filtration Speed Rapidity mls/min	Loading Capacity
642	2	229	30	Medium
509	4	85	80	Medium
515	25	29	235	High

## Pulp & Paper Blotting Paper

Ahlstrom 240 and 623 are blotting papers manufactured for use in the pulp and paper industry. Ahlstrom 240 is recommended for TAPPI T-205 and T-491 test methods. Ahlstrom 623 is also a very popular grade used for long-fiber hand sheet applications. Grade 623 absorbs more water at a faster rate.

### Typical grade properties

Grades	Base Weight g/m <sup>2</sup>	Total Absorbency g/m <sup>2</sup>	Absorbency Rate Sec./1ml H <sub>2</sub> O
240	249	598	13
623	246	740	5

### Catalog numbers Pulp and Paper Blotting Grades

\*All sizes are in inches.

Size*	240	Shts/ctn	Size*	623	Shts/ctn
8 x 8	2400-0808	2250	8 x 8	6230-0808	2000
24.5 x 24.5	2400-2424	250	12 x 12	6230-1212	800

## Phase Separation Filter Paper

Ahlstrom 480 is a hydrophobic silicone-impregnated paper intended for phase separation.

### Catalog numbers (100 circles/box)

\*All circle diameters are in cm.

Size*	480	Size*	480
7.0	4800-0700	15.0	4800-1500
9.0	4800-0900	18.5	4800-1850
11.0	4800-1100	24.0	4800-2400
12.5	4800-1250		

## Seed Testing Paper

Ahlstrom manufactures grades of non-toxic paper for use in the seed testing industry and in agricultural research laboratories. These grades meet ASTM designation D1030-75 and T406-SU-72. Most are available in sheets, circles, and rolls. Grades 8001 and 8002 are thin, tan, creped towels primarily used in seed germination. Grade 8002 is approximately twice as heavy as grade 8001 and will therefore

hold a greater volume of liquid. We offer two products in pleated strips. Grades 1765 and 1766 are mid-weight papers provided in double pleated format. 1765 is a white paper most useful for pelleted, medium, and large seeds. 1766 is tinted grey to improve visibility of seed with fine roots. For blotter sheets we recommend grade 939, a soft white paper with a coarse surface, or, for greater visibility of tiny

germinating roots, one of our grades of colored blotter papers. Grade 628 is a naturally colored tan paper with a firm hard finish. Grade 190 is of similar weight and tinted blue. Grade 191 and 194 are twice as heavy as grade 190 and grade 194 is a darker shade of blue. Grade 601 is a smooth white paper particularly suited for use in fluorescent testing applications.

### Typical grade properties

\*All grades available in custom cut dimension

Grades	Surface	Color	Basis Weight (g/m <sup>2</sup> )	Klemm (Capillary Rise) 1/16th in/min
190*	Smooth	Blue	300	16
191*	Smooth	Blue	700	14
194*	Smooth	Dark Blue	720	36
601*	Smooth	White	88	13
628*	Smooth	Tan	337	19
939*	Unfinished	White	140	55
1765	Unfinished	White	120	Available Pleated Only
1766	Unfinished	Gray	120	Available Pleated Only
8001*	Crepe	Tan	63	13
8002*	Crepe	White	120	12

**Non-Toxic Unbleached Blotter for Seed Testing****Grade 628 Sheets (1000/pk)**

\*All sizes are in inches.

Size*	Catalog Number
3-1/4 x 3-1/4	6280-0001
3-1/2 x 3-1/2	6280-0008
3-1/2 x 4	6280-0009
3-1/2 x 5-3/4	6280-0004
3-3/4 x 5-1/8	6280-0003
4 x 4	6280-0404
4-1/8 x 4-1/8	6280-0002
4-1/2 x 16	6280-0010
4-5/8 x 4-5/8	6280-0012
4-3/4 x 5-1/4	6280-0006
4-3/4 x 6	6280-0007
4-7/8 x 5	6280-0005
5 x 5	6280-0505
6 x 9	6280-0609
6 x 9.5	6280-0695
9 x 12	6280-0912
9-1/2 x 12	6280-9512

**Grade 628 Circles (1000/pk)**

\*All diameters are in inches.

Size*	Catalog Number
3-1/4	6280-0325
3-1/2	6280-0350
5-1/4	6280-0525
5-1/2	6280-0550

**Grade 628 Circles (1000/pk)**

\*\*All diameters are in centimeters.

Size**	Catalog Number
8.5	6280-0850
9.0	6280-0900
11.0	6280-1100
13.5	6280-1350

**Non-Toxic Blue Blotter for Seed Testing****Grade 190**

\*All sizes are in centimeters. \*\* Diameter is in centimetres.

Size*	Pack Size	Catalog Number
12.7 x 12.0	1000/pk	B190-1212
15.0 x 31.0 sheet	1000/pk	B190-1531
8.26**	5000/pk	B190-0826

**Grade 191 Circles (1000/pk)**

\*All diameters are in centimeters.

Size*	Catalog Number
8.50	B191-0850
9.0	B191-0900

**Grade 194 (1000/pk)**

\*All sizes are in centimeters. \*\* All diameters are in centimetres.

Size*	Catalog Number
10.2 x 10.2	B194-0404
12.0 x 11.9	B194-1219
12.7 x 12.7	B194-0505
5.0**	B194-0500
13.0**	B194-1300

**Non-Toxic Brown Towels for Seed Testing****(1000/pk)**

\*All sizes are in inches.

Size*	8001 regular weight	8002 heavy weight
9 x 18	8001-0918	--
9-1/2 x 12	8001-0003	--
10 x 12	8001-1012	--
10 x 15	8001-1015	8002-1015
10 x 20	8001-1020	8002-1020
10 x 30	8001-1030	8002-1030
12 x 15	8001-1215	--
12 x 16	8001-1216	--
12 x 18	8001-1218	8002-1218
15 x 30	8001-1530	8002-1530

**Non-Toxic White Blotter – High Absorbency****Grade 939 (1000/pk)**

\*All sizes are in inches.

Size*	Catalog Number
4-1/8 x 4-1/8	9390-0004
4-5/16 x 4-5/16	9390-0007
4-7/8 x 5	9390-0005
5 x 5	9390-0505
5 x 7	9390-0507
9 x 10	9390-0910
10 x 18	9390-1018
17-1/2 x 19	9390-0009
18-1/2 x 19-1/2	9390-0006
21-1/8 x 24-1/4	9390-0008

**Non-Toxic White Filter – for Fluorescent Testing****Grade 601 (1000/pk)**

\*All sizes are in inches.

Size*	Catalog Number
5 x 5	6010-0505
6 x 9	6010-0609
6 x 18	6010-0618
6-1/2 x 10	6010-0610
10 x 15	6010-1015
14 x 19	6010-1419

**Non-Toxic Pleated Strips****2000 x 110mm 50 double pleats (1000/pk)**

Grade	Color	Catalog Number
1765	White	1765-1150
1766	Grey	1766-1150

Additional sizes available upon request. Please contact customer service for details.

# Glass Microfiber Filters

Ahlstrom offers a full range of glass microfiber filters manufactured from 100% pure borosilicate glass. Because of their intrinsic properties, glass microfiber filters have wide applications in many areas of laboratory analysis, especially when fine filtration and high loading capacity is required. Applications for Ahlstrom glass microfiber filters include environmental analysis for water, wastewater, testing of soils, air pollution and monitoring, research and process biochemistry, and gravimetric analysis involving ignition of samples. Ahlstrom glass microfiber filters are also found in the filtration of hot gases and liquids, and in pre-filtration.

## Key features

- Qualitative analysis
- Laboratory analysis
- 100% pure borosilicate glass
- Rapid flow rate
- Fine particle retention  
0.7 $\mu$ m – 3.1 $\mu$ m
- High loading capacity
- Chemical and thermal  
resistance (up to 500°C)
- Long shelf life
- Brilliant white color reflecting  
more than 96% of visible light
- Custom cut



## Standard Glass Microfiber Filters

Standard glass microfiber filters contain no binders or other additives that may cause interference to sensitive enzymatic or other chemical reactions. The unique characteristics of glass microfiber filters make its use particularly advantageous to laboratory filtration by enabling fast filtration of large volumes and difficult solutions without premature clogging.

### Ahlstrom 151: 0.7µm – Slow Speed

This high performance grade is designed to retain extremely fine particles down to 0.7 µm. Ahlstrom 151 has retention comparable to membrane filter while providing higher flow and loading capacity. Ahlstrom 151 is recommended for filtering fine precipitated proteins. In the filtration of nucleic acids and difficult biochemical solutions, Ahlstrom 151 is used in combination with Ahlstrom 141 as a highly efficient protective and retentive pre-filter to extend the loading capacity of membrane filters. Grade 151 is recommended for use in TCLP procedure as described in test methods for evaluating solid wastes, EPA method 1311.

### Ahlstrom 121: 1.0µm – Medium Speed

This very thick grade offers finer particle retention than Ahlstrom 111 with high wet strength and loading capacity. Ahlstrom 121 is recommended for the clarification of liquid suspensions loaded with fine particulates. Ahlstrom 121 is also used in membrane pre-filtration and is also found in quantification of solids, and LSC (Liquid Scintillation Counting) techniques that require high loading capacity.

### Ahlstrom 131: 1.0µm – Medium Speed

This standard grade found in many environmental applications offers slightly more retention than Ahlstrom 111 with slightly lower filtration speed and loading capacity. Ahlstrom 131 is recommended for the collection of suspended solids in potable water and in industrial wastes. In biochemical tests, Ahlstrom 131 is suited for cell harvesting, liquid scintillation counting and the analysis of carbohydrates.

### Ahlstrom 161: 1.1µm – Medium Speed

This popular grade offers finer particle retention and higher flow rate than traditional analytical filter papers. Ahlstrom 161 is used in general laboratory applications, cell harvesting, liquid scintillation counting, and in the monitoring of air and water pollution. Ahlstrom 161 is generally recommended for water pollution monitoring techniques for total suspended solids.

### Ahlstrom 169: 1.0µm – Fast Speed

This glass microfiber grade is a smooth surface, binder-free filter with unique high temperature resistance. It offers fine particle retention and product stability to over 500 degrees Centigrade. The

temperature resistance makes Grade 169 well-suited for TCLP test methods, suspended solids determination, volatile solids testing, air pollution testing, and related EPA and ASTM protocols.

### Ahlstrom 111: 1.2µm – Fast Speed

This grade offers fine particle retention with high filtration speed and good loading capacity. Ahlstrom 111 is used in general laboratory filtration including atmospheric and water pollution monitoring such as intake controls, ozone-level, and water effluents. Grade 111 is also well suited for filtration of water and protein, testing of algae, bacteria cultures and for radioimmunoassay with weak beta emitters. Ahlstrom 111 is also recommended for filtering solvents in a high-resolution laboratory.

### Ahlstrom 141: 3.1µm – Fast Speed

This grade offers better filtration speed and a higher loading capacity than an analytical filter paper of similar particle retention. Ahlstrom 141 is particularly recommended for pre-filtration of membrane filters and is also used in combination with Ahlstrom 121 as a highly efficient protective and retentive grade density pre-filter for membrane filters.

## Typical grade properties

Grades	Retention in µm	Filtration Speed Herzberg sec/100mls	Filtration Speed Rapidity mls/min	Loading Capacity	Whatman Cross Reference
151	0.7	274	25	Very High	GF/F
121	1.0	143	48	Very High	GF/B
131	1.0	88	78	Very High	GF/C
161	1.1	67	102	Very High	934-AH
111	1.2	53	130	Very High	GF/A
141	3.1	19	350	Very High	GF/D
169	1.0	53	130	Very High	934-AH

## Catalog numbers (100 circles/box)

\*All circle diameters are in centimeters

Size*	111	121	131	141	151	161	169
2.1	1110-0210	1210-0210	1310-0210	1410-0210	1510-0210	1610-0210	1690-0210
2.4	1110-0240	1210-0240	1310-0240	1410-0240	1510-0240	1610-0240	1690-0240
2.5	1110-0250	1210-0250	1310-0250	1410-0250	1510-0250	1610-0250	1690-0250
4.25	1110-0425	1210-0425	1310-0425	1410-0425	1510-0425	1610-0425	1690-0425
4.7	1110-0470	1210-0470	1310-0470	1410-0470	1510-0470	1610-0470	1690-0470
5.5	1110-0550	1210-0550	1310-0550	1410-0550	1510-0550	1610-0550	1690-0550
7.0	1110-0700	1210-0700	1310-0700	1410-0700	1510-0700	1610-0700	1690-0700
9.0	1110-0900	1210-0900	1310-0900	1410-0900	1510-0900	1610-0900	1690-0900
11.0	1110-1100	1210-1100	1310-1100	1410-1100	1510-1100	1610-1100	1690-1100
12.5	1110-1250	1210-1250	1310-1250	1410-1250	1510-1250	1610-1250	1690-1250
15.0	1110-1500	1210-1500	1310-1500	1410-1500	1510-1500	1610-1500	1690-1500
24.0	1110-2400	1210-2400	1310-2400	1410-2400	1510-2400	1610-2400	1690-2400
32.0	1110-3200	1210-3200	1310-3200	1410-3200	1510-3200	1610-3200	1690-3200

## Products for Suspended Solids Analysis

This test for measuring solids in water calls for a glass filter disk without organic binder for some steps. After the filtering process, the filter retaining the solids from method B, C, or D is heated to 550°C in a muffle furnace and desiccated as necessary until measured weight is stable. Grade 169 meets the needs of both Standard Method 2540D: Total Suspended Solids and Standard Method 2540E: Volatile Suspended Solids.

Changes in the weight of the filter when heated to this temperature can affect the reliability of this test. Grade 169 is designed to maintain a stable weight at 550°C.

Any brittleness caused by the heat exposure can make the filter too difficult to handle and invalidate the test if pieces break off. Grade 169 exhibits similar handling characteristics before and after 30 minutes in a 600°C furnace.

### Catalog numbers

#### Grade 169 (100 circles/box)

\*All circle diameters are in centimeters.

Size*	169
2.1	1690-0210
2.4	1690-0240
2.5	1690-0250
4.25	1690-0425
4.7	1690-0470
5.5	1690-0550
7.0	1690-0700
9.0	1690-0900
11.0	1690-1100
12.5	1690-1250
15.0	1690-1500
24.0	1690-2400
32.0	1690-3200



### Pre-weighed Filters

Ahlstrom also offers a pre-washed and pre-weighed filter for determination of suspended solids.

Each filter is washed and weighed following the procedures in the latest version of STM 2540. It comes in an aluminum pan with the weight printed on the side for ease of use.

### Catalog numbers

#### Pre-weighed Filters (100 circles in pans/box)

\*All circle diameters are in centimeters.

Size *	Pre-weighed
4.7	169W-0470



## Micro-Quartz Fiber Filters

Ahlstrom's micro-quartz filters are useful for testing hot "stack" gases as the quartz fibers can withstand temperatures up to 900°C. In addition, micro-quartz is used when the highest purity media is required. With excellent filtration properties and minimal traces of metals and minerals, quartz fibers are dimensionally stable and can be used in the analysis of acidic gases (with the exception of HF). Other sizes available for special order. T293 also available for special order.

### Key features

- Each batch of MK 360 is trace elements certified
- Made of extremely pure micro-quartz filters
- Binder-free
- Particularly suitable for low amounts of particles
- Conditioned by high temperature pre-heating

### Catalog numbers (25 circles/box)

\*All circle diameters are in centimeters.

Size*	2.5	4.7
MK 360	3600-0250	3600-0470

### Typical levels of trace elements in MK 360

Element	mg/L
Al	25
As	0.2
Cd	<0.02
Co	<0.5
Cr	3.5
Cu	<1
Fe	20
Hg	<0.025
Mg	15
Mn	1
Na	10
Ni	0.5
Pb	0.3
Sb	<1
Sn	<0.5
Ti	1.5
V	<0.5
Zn	3

### Typical grade properties

\*A = 10 cm<sup>2</sup>, flow velocity 4- cm/s \*\* 1.2-3 µm.

Grade	Basic Weight g/m <sup>2</sup> s	Efficiency %**	Pressure Drop mbar*	Penetration %**	Temperature °C
MK 360	85	99.95	51.5	<0.05	900 max

## Filter Papers for TCLP

Ahlstrom offers three microfiber glass grades for use in the toxicity characteristic leaching procedure (TCLP) as described in EPA Method 1311.

### Grade 151 – Standard TCLP Filter

This high performance binder-free grade, described on page 17, is Ahlstrom's standard recommendation for TCLP testing.

### Grade 193 – Low Metal TCLP Filter

This grade has similar performance properties to Grade 151 and is made with acid-treated borosilicate glass microfibers with inherently low levels of barium and zinc. The filter media contains no binders or other additives that may cause interference with samples. The filters resist acids and bases and have a nominal particle retention of 0.7 µm.

### Grade 26 – Pre-washed Low Metal TCLP Filter

This grade uses the same acid-treated glass microfiber media as Grade 193, which is then acid-washed using 1N HNO<sub>3</sub>, as described in EPA Method 1311. The filter media is thoroughly rinsed in a multi-stage process using copious amounts of high-purity deionized water. Prewashing with acid further reduces the content of metals to exceptionally low levels. This eliminates the need to acid-wash the filters in your lab, saving valuable time and reducing waste disposal and reagent costs.

### Typical levels of trace elements in Grade 26

Element	mg/L
Ag	0.002
As	0.010
Ba	0.200
Cd	0.002
Cr	0.013
Hg	0.0005
Pb	0.006
Se	0.004

### Catalog numbers

\*All circle diameters are in centimeters.

Size*	Grade 193	Circles/Box	Grade 26	Circles/Box
4.7	1930-0470	100	0260-0470	100
9.0	1930-0900	100	0260-0900	50
11.0	1930-1100	100	0260-1100	50
12.5	1930-1250	100	0260-1250	50
14.2	1930-1420	100	0260-1420	50
15.0	1930-1500	100	0260-1500	50

# Chromatography, Electrophoresis and Blotting Paper

Ahlstrom manufactures a complete line of high quality chromatography, electrophoresis and blotting papers for use in gel transfer applications and chromatography techniques. These uniform, smooth, white sheets are the high purity, high quality, and high value standard. They are used in nucleic acid research such as Southern, Northern and Western blots, electroblotting and electrophoresis. Ahlstrom chromatography, electrophoresis and blotting papers are made from high purity and 100% FDA compliant alpha cotton cellulose, using ultra-pure RO water and contain no additives that could cause increased backgrounds or other interference in detection systems.

## Key features

- Controlled absorption
- Uniform absorption
- Consistency across the sheet
- Lot-to-lot consistency
- High purity, no sizing or fillers
- Excellent wet-strength and handling
- No hard spots or density variations
- No airborne fibers
- Custom cut
- Bulk packaging



## Ahlstrom Thin Papers

Thin papers are 100% pure cotton grades that are used in chromatography techniques where solute loading is not heavy. Ahlstrom thin series papers are ideal for general separations and for use as spacers in gel transfer techniques.

### Ahlstrom 601: 0.19 mm – 125 mm /30 min.

This thin paper with medium flow rate is the world standard in paper chromatography. The smooth, uniform white surface provides good resolution. Ahlstrom 601 is also used as a gel drying support and as a spacer in capillary and electroblotting sandwiches.

### Ahlstrom 642: 0.21 mm – 120 mm /30 min.

This thin paper with a flow rate lower than Ahlstrom 601 offers higher resolution and is recommended for optical or radiometric scanning techniques.

### Ahlstrom 631: 0.23 mm – 150 mm /30 min.

This slightly thicker grade provides a faster flow rate than Ahlstrom 601. Ahlstrom 631 is recommended for routine chromatography when loading is relatively low. Also suitable for routine quality control applications where high levels of resolution are not required and speed is important.

## Ahlstrom Thick Papers

Thick papers are 100% cotton grades that are used in chromatography techniques where solutes are heavily loaded. Thick papers are ideal grades for electrophoresis techniques.

### Ahlstrom 238: 0.34 mm – 140 mm /30 min.

This medium thick paper is recommended for general chromatography applications. Ahlstrom 238 is also ideal for use as wicks in protein or nucleic acid blotting to provide a uniform flow of buffer through the gel to the transfer membrane in a blotting sandwich. This is our most widely used blotting paper. Ahlstrom 238 is also suited for electrophoresis and the separation of inorganic compounds and for use in removing gels from glass supports.

a uniform flow of buffer through the gel to the transfer membrane in a blotting sandwich. Ahlstrom 237 is also suited for electrophoresis and the separation of inorganic compounds and for use in

### Ahlstrom 222: 0.83 mm – 220 mm /30 min.

This medium thick paper offers extremely high flow and is recommended for both electrophoresis of large molecules and as a blotter to complete the blotting sandwich in gel transfer applications. Ahlstrom 222 has a smooth and uniform texture which assures continuous contact of buffer from the chamber through the gel and transfer membrane to the opposite pole or weight.

### Ahlstrom 243: 0.95 mm – 180 mm /30 min.

This is one of the thicker grades in the Ahlstrom thick paper series. Ahlstrom 243 offers both moderately high flow and absorption and is recommended for chromatography of heavy solute loading.

### Ahlstrom 237: 0.42 mm – 150 mm /30 min.

This medium thick paper is recommended for general applications with medium-heavy solute loading. Like Ahlstrom 238, this grade is ideal for use as wicks in protein or nucleic acid blotting to provide

### Ahlstrom 320: 2.48 mm – 240 mm /30 min.

This super thick grade is one of the thickest papers on the market. Ahlstrom 320 offers extremely high flow and is recommended both for electrophoresis of large molecules and as a blotter to complete the blotting sandwich in gel transfer applications. Ahlstrom 320 provides a smooth and uniform texture assuring continuous contact of buffer from the chamber through the gel and transfer membrane to the opposite pole or weight.

## Ahlstrom RNA/DNA Blotting Papers

All the above-mentioned grades are also used as RNA/DNA Blotting papers. These grades are necessary tools in molecular biology and biochemical research to insure the transfer of biomolecules from the separation gel on to the transfer membrane. Ahlstrom offers a complete range of blotting, wicking, drying and spacing materials for use in gel transfer applications.

### Typical grade properties

Grades	Thickness mm	Klemm 1/16th/min	Absorption Speed mm/30 min	Whatman Cross Reference
601	0.19	13	125	1 CHR
642	0.21	12	120	2 CHR or 20 CHR
631	0.23	21	150	4 CHR
238	0.34	15	140	3MM CHR
237	0.42	18	150	3 CHR
222	0.83	33	220	31 ET CHR
243	0.95	21	180	17 CHR
320	2.48	48	240	—

### Catalog numbers (100/box; items with grade numbers in bold are 50/box)

\*All sheet sizes are in centimeters; additional sizes available in sheets or rolls.

Size*	601	642	631	222	237	238	243	320
5 x 7.5	6018-0575	6428-0575	6318-0575	2228-0575	2378-0575	2388-0575	2438-0575	<b>3208-0575</b>
7 x 8	6018-0708	6428-0708	6318-0708	2228-0708	2378-0708	2388-0708	2438-0708	<b>3208-0708</b>
7 x 10	6018-0710	6428-0710	6318-0710	2228-0710	2378-0710	2388-0710	2438-0710	<b>3208-0710</b>
11 x 14	6018-1114	6428-1114	6318-1114	2228-1114	2378-1114	2388-1114	2438-1114	<b>3208-1114</b>
14 x 17	6018-1417	6428-1417	6318-1417	2228-1417	2378-1417	2388-1417	2438-1417	<b>3208-1417</b>
16 x 18	6018-1618	6428-1618	6318-1618	2228-1618	2378-1618	2388-1618	2438-1618	<b>3208-1618</b>
20 x 20	6018-2020	6428-2020	6318-2020	2228-2020	2378-2020	2388-2020	2438-2020	<b>3208-2020</b>
46 x 57	6018-4657	6428-4657	6318-4657	2228-4657	2378-4657	2388-4657	2438-4657	<b>3208-4657</b>

# Micro Filtration Membranes and Syringe Filters

## Membranes

Membrane Type	Description	Chemical Compatibility	Maximum Operation Temperature	Sterilization
Cellulose Acetate	Low protein-binding, well suited for sterile filtration and clarification of aqueous solutions, nutrient media, buffers, and sera. They provide superior chemical resistance to alcohol and oil. These hydrophilic membranes offer excellent flow rates.	Resistant against aqueous solutions, pH 4-8, against most alcohols, oils and other organic solvents	180°C	Autoclaving at 121°C or 134°C, dry heat, gamma radiation (25 kGY) or with ethylene oxide
Nylon (Polyamide)	Membranes are hydrophilic and are widely used in both aqueous and organic solvent filtration applications. Well suited for sterilization and clarification of buffers and nutrient media with a low level of extractables.	Resistant to many solvents and alkali-solutions, pH range 3-14	100°C	Autoclaving at 121°C or 134°C or with ethylene oxide
Polyether Sulfone	PES membranes have a uniform pore structure with high mechanical stability and are chemically inert. PES offers excellent flow rates for critical filtration situations where high throughput is required with the lowest protein adsorption. PES is the perfect choice for the filtration of biological and pharmaceutical specimens.	Resistant to some solvents and aggressive, aqueous solutions, pH 1-13	200°C	Autoclaving at 121°C or 134°C, gamma radiation (25 kGY) or with ethylene oxide
PTFE	Permanently hydrophobic filter material, very suitable for air and gas filtration. PTFE membranes are extremely resistant to aggressive solvents and acids and can be used to filter particulate from both liquid and gas samples.	Resistant to solvents, acids and bases	200°C	Autoclaving at 121°C or 134°C or with ethylene oxide



## Ahlstrom ReliaDisc™ Gridded Microbiological Monitor Membranes

Ahlstrom offers gridded sterile membranes packed individually for use in colony counting, particle testing, and microscopy. These cellulose nitrate (CN) membranes are available in a standard 47 mm diameter size. Other diameters, colors, and pack sizes of gridded membranes are available for special order. Please contact customer service for additional details.

### Catalog numbers

Membrane Type	Pore Size	Grid	Membrane Diameter (mm)	Pack of 1000	Pack of 3x100 for Auto Dispenser
Cellulose Nitrate	0.45 µm	White w/ black grid	47	760217	760219
Cellulose Nitrate	0.45 µm	Black w/ white grid	47	760224	

## Ahlstrom ReliaDisc™ Non-sterile Membrane Filtration Media

Membrane filters are surface micro filtration filters used to remove particulates on and near the surface of the filter matrix by mechanical means. They are made of different polymers and are selected to meet the particular filtration challenge. Other sizes and types of plain membrane filters are available for special order. Please contact customer service for additional details.

### Catalog numbers

Membrane Type	Filter Diameter (mm)	Pore size (µm)	Pack of 100
Cellulose Acetate	47	0.45	760104
Cellulose Nitrate	47	0.45	760210
Nylon (Polyamide)	47	0.45	760181

## Ahlstrom ReliaPrep™ Non-Sterile Syringe Filters

Ahlstrom offers syringe filters for convenient filtration of small sample sizes through membranes. Additional pack sizes and syringe filters that have been sterilized or that have other membrane types, pore sizes, diameters, and connectors are available for special order. Please contact customer service for additional details.

### Catalog numbers

Membrane	Filter Diameter (mm)	Pore Size (µm)	Pack of 50	Pack of 500
Cellulose Acetate	28	0.2		760503
	28	0.45		760507
Nylon (Polyamide)	15	0.2	760540	760541
	15	0.45	760542	760543
	25	0.2		760531
	25	0.45		760532
Polyether Sulfone	28	0.2		760534
	28	0.45		760504
PTFE	4	0.2	760546	760547
	4	0.45	760544	760545
	15	0.2	760535	760536
	15	0.45	760537	760510
	25	0.2	760538	760539
	25	0.45		760512
Glass Fiber Prefilter	28	0.7		760529
Connectors: female luer lock inlet, male luer slip outlet				
CA, PES, GF – MBS Housing; PTFE, Nylon – Polypropylene Housing				

# Specialty Products

Ahlstrom offers specialty products for the scientific industry. Many products were designed alongside the researchers doing test development in order to provide the necessary performance characteristics.

## Extraction thimbles

Ahlstrom offers high purity extraction thimbles in cellulose for Soxhlet extractions and in glass and quartz for the analysis of environmental pollution. All extraction thimbles are hollow cylinders with a round bottom.

### Key features

- Made from high purity materials
- Consistent physical properties
- Available in a range of sizes
- Fit into popular automatic extraction systems

#### Ahlstrom 7100: Cellulose thimbles

Cellulose thimbles are high quality sample reservoirs for quality control, research, and analytical applications where solvent extraction of solids and semi-solids must be carried out. The use of a Soxhlet extractor provides a safe method of extraction with toxic and other noxious solvents.

Ahlstrom cellulose extraction thimbles are recommended for applications including: determination of fats in food, analysis of lacquer and binder in paints, vitamin A and carotene extractions, extraction of organic compounds from reaction mixtures, polymer determination in polymer industry, quality management of components used in pharmaceutical formulations.

Walls of cellulose thimbles are approximately 1.5 mm thick and have been found to perform satisfactorily in application requiring either a single or double wall thickness.

#### Ahlstrom ET/MG160:

##### Micro-glass fiber thimbles

Glass thimbles are used to sample dust particles and aerosols from gaseous streams in the analytical registration of environmental pollution and for Soxhlet extractions requiring solvents too aggressive for the cellulose thimbles.

#### Ahlstrom ET/MK360:

##### Micro-quartz fiber thimbles

Quartz thimbles are used for emission testing in high temperature environments. They can also be used for testing acidic gases which are not compatible with micro-glass fiber thimbles. Quartz meets the highest purity requirements due to the lowest possible heavy metal content.



## Typical grade properties

Grades	Inner Diameter (mm)	Thimble Ext. Length (mm)	Wall Thickness (mm)	Ash Content %	Penetration % DOP (0.3 µm)	Temperature Resistance °C
7100 – ET/401	+0/ -3	± 1	1.5 ± 0.5	< 0.1		
ET/MG160	+0/ -3	± 1	2 ± 0.5		<0.002	500 max
ET/MK360	+0/ -3	± 1	2 ± 0.5		<0.002	900 max

## Catalog numbers (25 thimbles/box)

\*All sizes are in millimeters. ▲ Sizes available for special order only. Please contact customer service for details.

Size*	Cellulose 7100	Glass ET/MG160	Quartz ET/MK360
10x50	▲	▲	
16x50		▲	▲
19x90	▲	E160-1990	▲
20x80	▲		
22x62			▲
22x70			▲
22x80	7100-2280	▲	▲
22x100	▲		
24x65			▲
25x100	▲	▲	▲
25x60	▲	▲	▲
25x70			▲
25x80	7100-2580		▲
25x90			▲
26x100	▲		▲
26x60	7100-2660	▲	▲
26x80	▲	▲	
27x70			▲
27x80	▲		
28x22	▲		
28x60		▲	▲
28x100	▲	▲	▲
28x120	▲		
29x110			▲
30x100	▲	E160-3010	▲
30x110			▲
30x150			▲
30x70		▲	▲
30x77	▲	▲	▲
30x80	7100-3080		▲
30x95	▲	▲	
33x100	▲		
33x118	▲		
33x80	7100-3380	▲	
33x94	7100-3394	E160-3394	▲
34x150			▲
35x75			▲
35x90			▲
35x120	▲		
35x150	▲	▲	▲
40x150	▲	▲	▲
43x123	7100-4323	▲	E360-4323
43x125	▲		
48x145	▲		
53x145		▲	▲

## pH Papers and Test Strips

Ahlstrom offers a range of test papers for rapid determination of pH and other conditions. Universal pH indicator papers are stocked in a roll of 5m in a plastic case, a refill pack of 3 reels for that case, and in a box of 200 strips. pH test strips, which have small squares of paper, each prepared with a different indicator, are also available. Ahlstrom offers a larger selection of pH indicator papers and test strips for different pH ranges plus a selection of reagent papers for special order. Please contact customer service for additional details.

### Catalog numbers

	Roll of 5m	Refill pack x3	Box of 200	Test Strip 100 per box
pH 0-14	-	-	-	PHT1-0014
pH 1-14	PHR5-0114	PHR3-0114	PHB2-0114	-
pH 1-11	PHR5-0111	PHR3-0111	PHB2-0114	-



## Polyshield® Fluid Barriers

Ahlstrom's Polyshield Fluid Barrier is a super absorbent, pure cellulose paper with an impermeable polyethylene backing that absorbs splatters and spills, and protects work areas from contamination and damage by toxic, infectious, corrosive, radioactive or staining materials. Polyshield's smooth, firm surface does not inhibit stability of bottles or tubes, and allows recovery of dry spills. Liquid samples can be recovered by washing the absorbed spill from the inert surface with the appropriate buffer. Disposal is safe and easy and Polyshield ashes readily upon incineration.

## Microwave Sample Pads

For microwave technology systems, analyzing moisture and fat content in foods. Glass microfiber paper is used to support food product samples when they are dried, as this media will withstand higher temperatures. Ahlstrom grade 161, binder-free glass microfiber paper provides the consistency and precision required for accurate testing by Quality Control Laboratories. Sample Pads are available in sheets and circles.

### Catalog numbers

\*50 sheets per pack

Size	Grade 4002
46cm x 57cm Sheets*	4002-4657
46cm x 50m Roll	4002-4650
92cm x 50m Roll	4002-9250

### Product sizes

Bulk packaging available

Grade	Sizes Available
161	11 x 11cm Sheets
161	9cm Circles
161	11cm Circles

## Ahlstrom Distributor Brand Cross Reference Guide\*

Conversion tables are provided to guide you in selecting the Ahlstrom grade that is most closely equivalent to your current brand of filter paper. Please note that grade comparisons between manufacturers are approximations based upon generally accepted industry practices. No two grades from different manufacturers are exact matches in terms of physical properties. For additional assistance in interpreting cross-references, or if you need further data, please contact customer service.

### Albet to Ahlstrom

Albet Grade	Ahlstrom Grade
2040A	631
2040B	237
2043A	601
2043B	642
346G	238
FP1505	55
FP1506	75
FP1507	95
FP1573	55
FP1574	95
FP1575	75
FP589/1	54
FP589/3	94
FP589/5	74
FP591	237
FP593	642
FP595	601
FP602H	610
FP604	631
FPGF50	111
FPGF51	121
FPGF52	131
FPGF53	141

### Machery-Nagel to Ahlstrom

Machery-Nagel Grade	Ahlstrom Grade
220	8613
615	613
616	601
619 de	610
640 d	94
640 m	74
640 w	54
750 n	615
85/70 BF	161
GF-1	111
GF-2	121
GF-4	141
GF-5	151

### Schleicher & Schuell to Ahlstrom

S&S Grade	Ahlstrom Grade
GF30	161
GF50	161
GF52	111
GF53	121
GF55	151
22/2	237
402	950
404 1/2	562
410 1/2	562
470	222
551	8613
580 1/2	509
589/1	54
589/2	74
589/3	94
589/4	74
589/5	95
591	237
593	601
595	631
597	601
597L 1/2	509
598	238
602	610
604	631
605	550
740E	222
0856	962
0905	962
0860	909
903	226
0903	613
1505	55
1506	75
1507	95
1573 1/2	505
1574	909
1575	950
2040A,B	631
2043A	601
2043B	642
2045A,B	642
2316	238
2469	237
2555 1/2	509
2668	243
2727	320
3002	962
3003	909
5703	237
Sharkskin	992

### Whatman to Ahlstrom

Whatman Grade	Ahlstrom Grade
1, 1CHR	601
2, 2CHR, 20CHR	642
2V	542
3, 3CHR	237
3MM	238
4, 4CHR	631
5	610
6	950
17CHR	243
31ETCHR	222
40	74
41	54
42	94
50	95
52	75
54	55
91	909
113	961
114	962
114V	562
540	75
541	55
542	95
551	8613
GF/A	111
GF/B	121
GF/C	131
GF/D	141
GF/F	151
Student Grade	613
BFC 180	226
Benchkote	Polysield 4002
TSS	161
934-AH	161/169
TCLP	151
1PS	480

### VWR to Ahlstrom

VWR Grade	Ahlstrom Grade
161	161
410	610
413	613
415	615
454	54
474	74
494	94
617	617
691	111
693	131

### Micro Filtration Systems to Ahlstrom

MFS Grade	Ahlstrom Grade
1	631
2	601
3	74
4A	95
5A	75
5B	74
5C	94
131	642
232	642
235	610
GA-55	111
GB-140	121
GF-75	151
GD-120	141
GC-50	131

### Reeve-Angel to Ahlstrom

Reeve-Angel Grade	Ahlstrom Grade
200	950
201	909
202	962
230	961
801	513
802	515
830 5	17
934-AH	161/169

### Fisher Scientific to Ahlstrom

Fisher Grade	Ahlstrom Grade
G4	131
G6	111
G8	141
P2	610
P4	642
P5	613
P8	631
P8 Crepe	962
Q2	94
Q5	74
Q8	54
Thick	238
Thin	601

Ahlstrom is a high performance fiber-based materials company, partnering with leading businesses around the world to help them stay ahead. Our products are used in a large variety of everyday applications, such as filters, medical gowns and drapes, diagnostics, wallcoverings, flooring and food packaging. We have a leading market position in the businesses in which we operate. In 2012, Ahlstrom's net sales from the continuing operations (excluding Label and Processing business) amounted to EUR 1 billion. Our 3,800 employees serve customers in 28 countries on six continents. Ahlstrom's share is quoted on the NASDAQ OMX Helsinki.

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<http://www.labfilter.com>

You'll find our  
**Distributor Brand Cross Reference Guide**  
on the inside back cover.