

# LABORATORY PRODUCTS CATALOG

North America

**Архангельск** (8182)63-90-72  
**Астана** (7172)727-132  
**Астрахань** (8512)99-46-04  
**Барнаул** (3852)73-04-60  
**Белгород** (4722)40-23-64  
**Брянск** (4832)59-03-52  
**Владивосток** (423)249-28-31  
**Волгоград** (844)278-03-48  
**Вологда** (8172)26-41-59  
**Воронеж** (473)204-51-73  
**Екатеринбург** (343)384-55-89  
**Иваново** (4932)77-34-06

**Ижевск** (3412)26-03-58  
**Иркутск** (395)279-98-46  
**Казань** (843)206-01-48  
**Калининград** (4012)72-03-81  
**Калуга** (4842)92-23-67  
**Кемерово** (3842)65-04-62  
**Киров** (8332)68-02-04  
**Краснодар** (861)203-40-90  
**Красноярск** (391)204-63-61  
**Курск** (4712)77-13-04  
**Липецк** (4742)52-20-81

**Магнитогорск** (3519)55-03-13  
**Москва** (495)268-04-70  
**Мурманск** (8152)59-64-93  
**Набережные Челны** (8552)20-53-41  
**Нижний Новгород** (831)429-08-12  
**Новокузнецк** (3843)20-46-81  
**Новосибирск** (383)227-86-73  
**Омск** (3812)21-46-40  
**Орел** (4862)44-53-42  
**Оренбург** (3532)37-68-04  
**Пенза** (8412)22-31-16

**Пермь** (342)205-81-47  
**Ростов-на-Дону** (863)308-18-15  
**Рязань** (4912)46-61-64  
**Самара** (846)206-03-16  
**Санкт-Петербург** (812)309-46-40  
**Саратов** (845)249-38-78  
**Севастополь** (8692)22-31-93  
**Симферополь** (3652)67-13-56  
**Смоленск** (4812)29-41-54  
**Сочи** (862)225-72-31  
**Ставрополь** (8652)20-65-13

**Сургут** (3462)77-98-35  
**Тверь** (4822)63-31-35  
**Томск** (3822)98-41-53  
**Тула** (4872)74-02-29  
**Тюмень** (3452)66-21-18  
**Ульяновск** (8422)24-23-59  
**Уфа** (347)229-48-12  
**Хабаровск** (4212)92-98-04  
**Челябинск** (351)202-03-61  
**Череповец** (8202)49-02-64  
**Ярославль** (4852)69-52-93

**Киргизия** (996)312-96-26-47

**Россия** (495)268-04-70

**Казахстан** (772)734-952-31

# Ahlstrom-Munksjö, your key partner in laboratory filtration

Ahlstrom-Munksjö is a global leader in fiber-based materials, supplying innovative and sustainable solutions to customers worldwide in a variety of industries, recognized for providing superior service, reliability and high quality products.

Ahlstrom-Munksjö carries on the engineering legacy of two pioneering manufacturers of analytical filter paper in the 1800s, Eaton-Dikeman in Pennsylvania and Munktell in Germany. The paper grades originally presented under the E-D label continue to be manufactured in Mt Holly Springs, PA, with processes updated over time to meet continually more demanding requirements from laboratories, and are converted into various sized circles and sheets in South Carolina. Ahlstrom-Munksjö was formed during a merger in 2017 and as a global company is continually moving forward to provide better fiber based solutions for the life sciences market.

## Custom Order and Product Development

Ahlstrom-Munksjö is recognized worldwide as a leading custom manufacturer and converter of filtration, absorbent and specialized web materials. We can also 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-Munksjö 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-Munksjö.

## Samples

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



## Distribution

Ahlstrom-Munksjö 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-Munksjö products. Ahlstrom-Munksjö 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-Munksjö 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-Munksjö will either send you a product replacement or issue a credit.

## Quality

Ahlstrom-Munksjö'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-Munksjö. 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.

## CONTENTS

<b>Qualitative Filter Papers</b>	<b>4</b>
<b>Quantitative Filter Papers (Ashless and Low Ash)</b>	<b>7</b>
<b>Glass Microfiber Filters</b>	<b>10</b>
<b>Micro-Quartz Fiber Filters</b>	<b>13</b>
<b>Micro Filtration Membranes and Syringe Filters</b>	<b>14</b>
<b>Chromatography, Electrophoresis and Blotting Paper</b>	<b>16</b>
<b>Specialty Products</b>	<b>18</b>
<b>Seed Testing Paper</b>	<b>22</b>
<b>Extraction Thimbles</b>	<b>24</b>
<b>Specimen Collection Cards</b>	<b>25</b>
<b>Environmental Testing Standards</b>	<b>26</b>

# Qualitative Filter Papers

Ahlstrom-Munksjö'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-Munksjö 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-Munksjö 610 1.5 $\mu\text{m}$ , Slow Speed

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

### Ahlstrom-Munksjö 642 2 $\mu\text{m}$ , Medium Speed

This grade has finer particle retention than Grade 601 but with slightly lower filtration speed. Grade 642 also has higher absorption than Grade 601. It is used in general laboratory applications to retain particles above 2  $\mu\text{m}$  in size. Grade 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-Munksjö 601 2.5 $\mu\text{m}$ , 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. Grade 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-Munksjö 237 3 µm, 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. Grade 237 is also highly suitable for use in Buchner funnels and for dye filtration.

### Ahlstrom-Munksjö 609 4 µm, Medium Speed

This grade is an evolution of Grade 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-Munksjö 627 4 µm, Medium Speed

This asphalt testing grade has a high loading capacity grade and is almost twice as thick as Grade 237.

### Ahlstrom-Munksjö 613 6 µm, Medium Speed

This is a strong filter paper with a medium flow rate and retention. Grade 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-Munksjö 631 10 µm, Medium Speed

This grade is used for the filtration of coarse particles and gelatinous precipitates such as ferric aluminum and magnesium hydroxides. Grade 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-Munksjö 615 25 µm, Fast Speed

This fast filtering grade is an intermediate grade between Grade 617 and Grade 631. Grade 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-Munksjö 617 35 µm, Fast Speed

This is an extremely fast filtering grade and has a larger particle retention than Grade 631. Grade 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. Grade 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 Herzberg sec/100mls	Filtration Speed Rapidity ml/min	Loading Capacity	GE 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	—
627	4.0	80	85	High	—
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>	6310-0700	6420-0700
9.0	<b>2370-0900</b>	6010-0900	6090-0900	6100-0900	6130-0900	6150-0900	<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	6420-1850
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	6150-2700	<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

## 6 Qualitative Filter Papers

### Wet-Strengthened Grades

#### Ahlstrom-Munksjö 950

##### 2.0 µm, Slow Speed

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

#### Ahlstrom-Munksjö 909

##### 3.0 µm, Medium Speed

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

#### Ahlstrom-Munksjö 962

##### 27 µm, Fast Speed

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

#### Ahlstrom-Munksjö 961

##### 40 µm, 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 Grade 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	GE 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	<b>9610-0425</b>
4.7	9500-0470	9090-0470	9620-0470	<b>9610-0470</b>
5.5	9500-0550	9090-0550	9620-0550	<b>9610-0550</b>
7.0	9500-0700	9090-0700	9620-0700	<b>9610-0700</b>
9.0	9500-0900	9090-0900	9620-0900	<b>9610-0900</b>
11.0	9500-1100	9090-1100	9620-1100	<b>9610-1100</b>
12.5	9500-1250	9090-1250	9620-1250	<b>9610-1250</b>
15.0	9500-1500	9090-1500	9620-1500	<b>9610-1500</b>
18.5	9500-1850	9090-1850	9620-1850	<b>9610-1850</b>
20.5	9500-2050	9090-2050	9620-2050	<b>9610-2050</b>
24.0	9500-2400	9090-2400	9620-2400	<b>9610-2400</b>
27.0	9500-2700	9090-2700	9620-2700	<b>9610-2700</b>
32.0	9500-3200	9090-3200	9620-3200	<b>9610-3200</b>
38.5	9500-3850	9090-3850	9620-3850	<b>9610-3850</b>
40.0	9500-4000	9090-4000	9620-4000	<b>9610-4000</b>
45.0	9500-4500	9090-4500	9620-4500	<b>9610-4500</b>
50.0	9500-5000	9090-5000	9620-5000	<b>9610-5000</b>

# Quantitative Filter Papers

## Ashless and Low Ash

Ahlstrom-Munksjö 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
- Acid-wash treated
- High wet-strength
- Consistent performance
- Hardened grades available
- Custom cut
- Bulk packaging



## 8 Quantitative Filter Papers (Ashless and Low Ash)

### Ashless Grades (Ash 0.007%)

These standard ashless grades are suitable for both gravimetric analysis and sample preparations where a high-purity filter is preferred in the preparation of samples for use in analysis involving instrumental techniques.

#### Ahlstrom-Munksjö 94

**1.5  $\mu\text{m}$ , 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-Munksjö 74

**2.0  $\mu\text{m}$ , Medium Speed**

This grade has medium flow rate and good particle retention and is the most commonly used acid-washed filter. Grade 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. Grade 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. Grade 74 is also found in general soil analysis for separating solid from aqueous extracts.

#### Ahlstrom-Munksjö 54

**10  $\mu\text{m}$ , 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. Grade 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-Munksjö 95

**1.5  $\mu\text{m}$ , 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-Munksjö 75

**2.0  $\mu\text{m}$ , 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. Grade 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-Munksjö 55

**15  $\mu\text{m}$ , 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. Grade 55 is also used in air and foodstuffs analysis and for chloride and phosphorous in cement, coal and coke.





## Low Ash Grade (Ash 0.01%)

These hardened low ash grades have an intermediate ash content between standard qualitative grades and ashless grades. They are suitable for routine gravimetric analysis and typical preparation of samples for use in analysis involving instrumental techniques.

### Ahlstrom-Munksjö 391 2-3 $\mu\text{m}$ , Slow Speed

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

### Ahlstrom-Munksjö 392 5-8 $\mu\text{m}$ , Medium Speed

This grade has a medium flow rate and good particle retention and can be used for a wide variety of applications that require a lower ash content than standard qualitative grades, including gravimetric analysis of components in heavy industry.

### Ahlstrom-Munksjö 388 12-15 $\mu\text{m}$ , Fast Speed

This fast filtering grade is recommended for the filtration of coarse and gelatinous precipitates for gravimetric analysis.



## Typical grade properties

Grades	Retention in $\mu\text{m}$	Filtration Speed Herzberg sec/100mls	Filtration Speed Rapidity mls/min	Loading Capacity	GE Whatman Cross Reference
391	2-3	1200	7	Medium	50
392	5-8	300	33	Medium	52
388	12-15	40	267	Medium	54
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
75	2.0	149	45	Medium	540
55	15.0	31	220	Medium	541

## Catalog numbers (100 circles/box)

\*All circle diameters are in centimeters

Size*	54	55	74	75	94	95	388	391	392
4.25	0540-0425	0550-0425	0740-0425	0750-0425	0940-0425	0950-0425	3880-0425	3910-0425	3920-0425
4.70	0540-0470	0550-0470	0740-0470	0750-0470	0940-0470	0950-0470	3880-0470	3910-0470	3920-0470
5.50	0540-0550	0550-0550	0740-0550	0750-0550	0940-0550	0950-0550	3880-0550	3910-0550	3920-0550
7.00	0540-0700	0550-0700	0740-0700	0750-0700	0940-0700	0950-0700	3880-0700	3910-0700	3920-0700
9.00	0540-0900	0550-0900	0740-0900	0750-0900	0940-0900	0950-0900	3880-0900	3910-0900	3920-0900
11.00	0540-1100	0550-1100	0740-1100	0750-1100	0940-1100	0950-1100	3880-1100	3910-1100	3920-1100
12.50	0540-1250	0550-1250	0740-1250	0750-1250	0940-1250	0950-1250	3880-1250	3910-1250	3920-1250
15.00	0540-1500	0550-1500	0740-1500	0750-1500	0940-1500	0950-1500	3880-1500	3910-1500	3920-1500
18.50	0540-1850	0550-1850	0740-1850	0750-1850	0940-1850	0950-1850	3880-1850	3910-1850	3920-1850
24.00	0540-2400	0550-2400	0740-2400	0750-2400	0940-2400	0950-2400	3880-2400	3910-2400	3920-2400
27.00	0540-2700	0550-2700	0740-2700	0750-2700	0940-2700	0950-2700	3880-2700	3910-2700	3920-2700
32.00	0540-3200	0550-3200	0740-3200	0750-3200	0940-3200	0950-3200	3880-3200	3910-3200	3920-3200
40.00	0540-4000	0550-4000	0740-4000	0750-4000	0940-4000	0950-4000	3880-4000	3910-4000	3920-4000

# Glass Microfiber Filters

Ahlstrom-Munksjö 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-Munksjö 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-Munksjö 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**  
**0.7µm – 3.1µm**
- **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-Munksjö 151 0.7 µm, Slow Speed

This high performance grade is designed to retain extremely fine particles down to 0.7 µm. Grade 151 has retention comparable to membrane filter while providing higher flow and loading capacity. Grade 151 is recommended for filtering fine precipitated proteins. In the filtration of nucleic acids and difficult biochemical solutions, Grade 151 is used in combination with Grade 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-Munksjö 121 1.0 µm, Medium Speed

This very thick grade offers finer particle retention than Grade 111 with high wet strength and loading capacity. Grade 121 is recommended for the clarification of liquid suspensions loaded with fine particulates. Grade 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-Munksjö 131 1.0 µm, Medium Speed

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

### Ahlstrom-Munksjö 161 1.1 µm, Medium Speed

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

### Ahlstrom-Munksjö 169 1.0 µm, 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 suspended solids determination, volatile solids testing, air pollution testing, and related EPA and ASTM protocols.

### Ahlstrom-Munksjö 111 1.2 µm, Fast Speed

This grade offers fine particle retention with high filtration speed and good loading capacity. Grade 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. Grade 111 is also recommended for filtering solvents in a high-resolution laboratory.

### Ahlstrom-Munksjö 141 3.1 µm, Fast Speed

This grade offers better filtration speed and a higher loading capacity than an analytical filter paper of similar particle retention. Grade 141 is particularly recommended for pre-filtration of membrane filters and is also used in combination with Grade 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	GE 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

Standard Method 2450 for measuring solids in water calls for a glass filter disk without organic binder for some steps. It is important for this gravimetric test that the filter itself not change weight so that the solids can be accurately measured.

### Grade 169 for STM2540-E

#### Volatile Suspended Solids

- Designed and formulated specifically to maintain a stable weight at 550°C.
- Shows similar handling characteristics before and after 30 minutes in a 600°C furnace.
- Can also be used for STM2540-D, -C, and -B.
- Also available in pre-washed and pre-weighed format.
- Directly comparable and substitutable for GE Whatman 934-AH™.

### Grade 161 for STM2540-D

#### Total Suspended Solids

- Suitable for heating up to temperatures less than 500°C.
- Can also be used for STM 2540-C and -B.
- Standard microfiber glass grade.

### Catalog numbers

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

\*All circle diameters are in centimeters

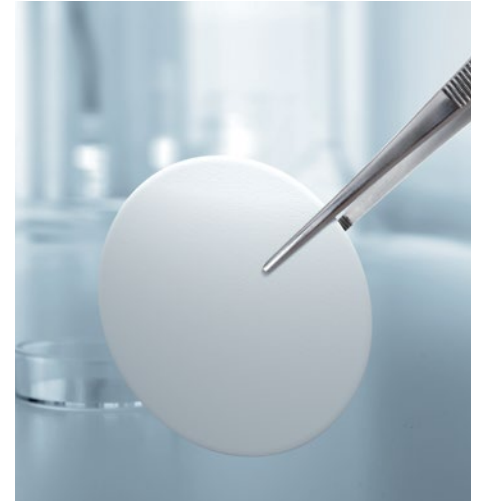
Size*	169
2.1	1690-0210
2.4	1690-0240
2.5	1690-0250
4.25	1690-0425
4.7	1690-0470
5.5	1690-0550
7.0	1690-0700
9.0	1690-0900
11.0	1690-1100
12.5	1690-1250
15.0	1690-1500
24.0	1690-2400
32.0	1690-3200

### Catalog numbers

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

\*All circle diameters are in centimeters

Size *	Pre-weighed
4.7	169W-0470



## Filter Papers for TCLP

Ahlstrom-Munksjö 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-Munksjö'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

# Micro-Quartz Fiber Filters

Two products for a complete offer for airborne particulate monitoring in high temperatures and aggressive atmospheres or when the lowest level of Trace Elements Analysis is required.

## KEY FEATURES

- Made of extremely pure micro-quartz filters
- Binder-free
- Particularly suitable for low amounts of particles
- Conditioned by high temperature pre-heating

## Grade MK 5 Air Monitoring Quartz Filter

Ahlstrom-Munksjö offers a new grade of high-purity binder-free quartz suitable for air monitoring applications in high temperatures and aggressive atmospheres or when low levels of trace elements are required. Grade MK 5 can be used up to 500°C.

## Grade MK 360 100% High Purity Quartz Filter

This 100% quartz microfiber filter is available for applications requiring extremely low levels of trace elements or media that can withstand temperatures between 500°C and 900°C.

Also available in thimble form for air sampling.

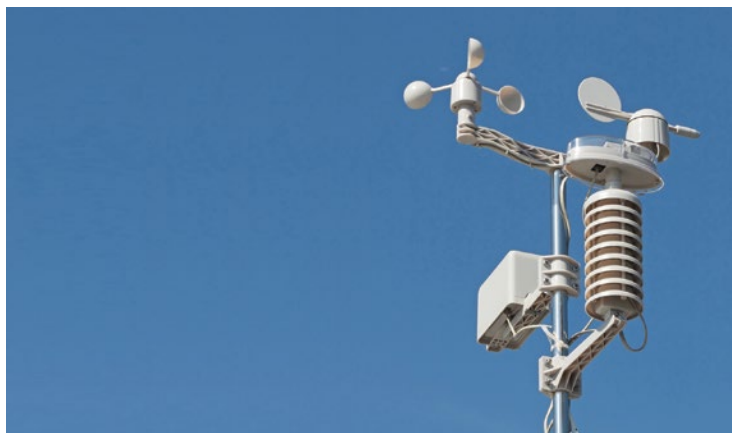
Size (mm) 25/pk	MK 360 Thimbles
25 x 100	E360-2550
43 x 123	E360-4323

## Catalog numbers

All circle diameters are in centimeters

Size*	MK 5	MK 360
2.5	0050-0250	3600-0250
3.7	0050-0370	3600-0370
4.5	0050-0450	3600-0450
4.7	0050-0470	3600-0470
5.0	0050-0500	3600-0500
9.0	0050-0900	3600-0900
10.2	0050-1020	3600-1020
14.2	0050-1420	3600-1420
15.0	0050-1500	3600-1500
	50 circles/box	25 circles/box

25 sheets/pack	MK 5	MK 360
8 in x 10 in Sheets	0050-0810	3600-0810



## Typical grade properties

Grade	Basis Weight g/m <sup>2</sup>	Alkalinity µeq/g of filter	Particle retention 0.3 µm %	Max Temperature °C	Whatman Cross Reference	Pall Cross-Reference
MK 5	85	11.7	99.9996	500	QM-A	
MK 360	85	0	99.9995	900	QM-H	Tissuquartz™

# 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
Cellulose Nitrate / Mixed Cellulose Ester	Membrane composed primarily of cellulose nitrate with a smaller percentage of cellulose acetate for increased stability. Shows effective retention of bacteria, high flow rates, and is appropriate for colony counting applications.	Resistant against aqueous solutions, pH 4-8, against hydrocarbons and some solvents	130°C	Autoclaving at 121°C, 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.	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
Cellulose Nitrate / Mixed Cellulose Ester	Membrane composed primarily of cellulose nitrate with a smaller percentage of cellulose acetate for increased stability. Shows effective retention of bacteria, high flow rates, and is appropriate for colony counting applications.	Resistant against aqueous solutions, pH 4-8, against hydrocarbons and some solvents	130°C	Autoclaving at 121°C, gamma radiation (25 kGY) or with ethylene oxide

Other sizes and variations of membranes and syringe filters may be available for special order. Please contact customer service for additional details.



## Ahlstrom-Munksjö ReliaDisc™ Sterile Gridded Microbiological Monitor Membranes

Ahlstrom-Munksjö offers sterile gridded membranes packed individually for use in colony counting, particle testing, and microscopy.

### Catalog numbers

Membrane Type	Pore Size	Grid	Membrane Diameter (mm)	Pack of 1000	Pack of 100	Pack of 3x100 for Auto Dispenser
Cellulose Nitrate/MCE	0.45 µm	White w/ black grid	47	760217	760216	760219
Cellulose Nitrate/MCE	0.45 µm	Black w/ white grid	47	760224		

## Ahlstrom-Munksjö 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.

### 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-Munksjö ReliaPrep™ Sterile Syringe Filters

Ahlstrom-Munksjö offers syringe filters for convenient filtration of small sample sizes through membranes. Sterile syringe filters are available for clarifying biological solutions, including cell culture media.

### Catalog numbers

Membrane	Filter Diameter (mm)	Pore size (µm)	Pack of 50
Cellulose Acetate	28	0.2	760502
	28	0.45	760506
Polyether sulfone	28	0.2	760501

MGS Housing; Female luer lock inlet; Male luer lock outlet

## Ahlstrom-Munksjö ReliaPrep™ Non-Sterile Syringe Filters

Ahlstrom-Munksjö offers syringe filters for convenient filtration of small sample sizes through membranes.

### Catalog numbers

Membrane	Filter Diameter (mm)	Pore Size (µm)	Pack of 500
Cellulose Acetate	28	0.2	760503
	28	0.45	760507
Nylon (Polyamide)	15	0.2	760541
	15	0.45	760543
	25	0.2	760531
	25	0.45	760532
Polyether Sulfone	28	0.2	760534
	28	0.45	760504
PTFE	4	0.2	760547
	4	0.45	760545
	15	0.2	760536
	15	0.45	760510
	25	0.2	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

# Chromatography, Electrophoresis and Blotting Paper

Ahlstrom-Munksjö 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-Munksjö 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-Munksjö Thin Papers

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

### Ahlstrom-Munksjö 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. Grade 601 is also used as a gel drying support and as a spacer in capillary and electroblotting sandwiches.

### Ahlstrom-Munksjö 642

**0.21 mm - 120 mm / 30 min.**

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

### Ahlstrom-Munksjö 631

**0.23 mm - 150 mm / 30 min.**

This slightly thicker grade provides a faster flow rate than Grade 601. Grade 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-Munksjö 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-Munksjö 238

**0.34 mm - 140 mm / 30 min.**

This medium thick paper is recommended for general chromatography applications. Grade 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. Grade 238 is also suited for electrophoresis and the separation of inorganic compounds and for use in removing gels from glass supports.

### Ahlstrom-Munksjö 237

**0.42 mm - 150 mm / 30 min.**

This medium thick paper is recommended for general applications with medium-heavy solute loading. Like Grade 238, this grade is 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. Grade 237 is also suited for electrophoresis and the separation of inorganic compounds and for use in.

### Ahlstrom-Munksjö 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. Grade 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-Munksjö 243

**0.95 mm - 180 mm / 30 min.**

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

### Ahlstrom-Munksjö 320

**2.48 mm - 240 mm / 30 min.**

This super thick grade is one of the thickest papers on the market. Grade 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. Grade 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.

## Typical grade properties

Grades	Thickness mm	Klemm 1/16th/min	Absorption Speed mm/30 min	GE 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	—

## Blotting Membranes

Ahlstrom-Munksjö Cellulose Nitrate membranes have been specially designed for Northern, Western and Southern blotting applications, to show a high binding capacity and fast transfer of proteins. They are compatible with a variety of detection methods including chemiluminescent, colorimetric, and fluorescent.

Grades	Pore size (µm)	300 mm x 3 m Roll
Cellulose nitrate	0.22	703104
Cellulose nitrate	0.45	703103

## 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>

# Specialty Products

Ahlstrom-Munksjö offers specialty products for the scientific industry. Many papers and products were designed alongside the researchers doing test development in order to provide the necessary performance characteristics. Ahlstrom-Munksjö continues to innovate and is open to new challenges and new opportunities from companies that use our analytical filter papers and other products.



## Pleated (Fluted) Filter Paper

Ahlstrom-Munksjö 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-Munksjö'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 12.5 cm to 50 cm 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	<b>5170-1250</b>	5420-1250	5500-1250	5190-1250	5620-1250
15.0	5050-1500	5090-1500	5130-1500	5150-1500	<b>5170-1500</b>	5420-1500	5500-1500	5190-1500	5620-1500
18.5	5050-1850	5090-1850	5130-1850	5150-1850	<b>5170-1850</b>	5420-1850	5500-1850	5190-1850	5620-1850
24.0	5050-2400	5090-2400	5130-2400	5150-2400	<b>5170-2400</b>	5420-2400	5500-2400	5190-2400	5620-2400
32.0	5050-3200	5090-3200	5130-3200	5150-3200	<b>5170-3200</b>	5420-3200	5500-3200	5190-3200	5620-3200
38.5	5050-3850	5090-3850	5130-3850	5150-3850	<b>5170-3850</b>	5420-3850	5500-3850	5190-3850	5620-3850

## Beer Testing Filter Paper

Ahlstrom-Munksjö manufactures a full range of laboratory filter paper for use in the beer industry. Grade 642 is recommended for the WORT color test. Grade 515 is a pleated filter used in the SCABA analyzer, while Grade 509, also pleated, is used in the IBU test and in Malt-4 analysis and degassing. Grade 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

## Phase Separation Filter Paper

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

### Catalog numbers (100 circles/box)

Size*	480
7.0	4800-0700
9.0	4800-0900
11.0	4800-1100
12.5	4800-1250

\*All circle diameters are in centimeters

Size*	480
15.0	4800-1500
18.5	4800-1850
24.0	4800-2400

## 20 Specialty Products

### Sugar Testing Filter Paper

Ahlstrom-Munksjö offers a full range of specially designed filter paper for use in the sugar industry. Grade 8613 has a smooth black finish designed for use in applications requiring visual examination of particles. Grade 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 ml/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

### Pulp & Paper Blotting Paper

Ahlstrom-Munksjö Grade 240 and 623 are blotting papers manufactured for use in the pulp and paper industry. Grade 240 is recommended for TAPPI T-205 and T-491 test methods. Grade 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
8 x 8	2400-0808	2250
24.5 x 24.5	2400-2424	250

Size*	623	Shts/ctn
8 x 8	6230-0808	2000
12 x 12	6230-1212	800

## pH Papers and Test Strips

Ahlstrom-Munksjö offers a range of test papers for rapid determination of pH and other conditions. Universal pH indicator papers are stocked in a roll of 5 m 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-Munksjö 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	PHB2-0111	-

## Polyshield® Fluid Barriers

Ahlstrom-Munksjö'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.

### Catalog numbers

\*50 sheets per pack

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



## 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-Munksjö 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.

### Product sizes

Bulk packaging available

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



# Seed Testing Paper

Ahlstrom-Munksjö manufactures non-toxic paper for use in the seed testing industry and in agricultural research laboratories. The papers are made of pure cellulose fibers, are sufficiently strong for the test, and are designed to avoid any substances which could influence the growth of seedlings. Most are available in sheets, circles, and rolls. Our blotter sheets come in a variety of weights, colors, and surface finishes surface finishes to better enhance visibility and maintain the required moisture levels.



## Creped Toweling

Grades 8001 and 8002 are thin, tan, creped papers primarily used in seed germination. The tan color is the natural color of the pulp, as this paper is not treated to whiten it. Grade 8002 is approximately twice as heavy as Grade 8001 and will therefore hold a greater volume of liquid.

## Pleated Strips

Grades 1765 and 1766 are most often used for pelleted, medium, and large seeds. They are available only in pleated format, 110 mm wide, with 50 double pleats that can be expanded along the length. Grade 1765 is white and Grade 1766 is tinted grey for improved visibility of fine root systems.

## Blotter Papers

Grade 939 is a soft white paper with a coarse surface. We offer blue blotters for a tinted background with a somewhat firmer surface. Grade 190 is a medium-weight smooth blotter tinted blue for greater visibility of seeds and root systems. Grade 191 is a heavy-weight smooth blotter the same shade of blue as Grade 190. At twice the weight, this grade will hold a greater volume of moisture. Grade 194 is a heavy-weight smooth blotter tinted to a darker blue color than Grade 191. Grade 628 is a medium weight blotter with a firm, hard finish and natural tan coloring.

## Fluorescent Testing

Grade 601 is a smooth white filter particularly suitable for testing seed and roots appearance under fluorescent light.

## 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	Tan	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.

# Extraction Thimbles

Ahlstrom-Munksjö 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.

## Ahlstrom-Munksjö 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-Munksjö 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-Munksjö 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-Munksjö 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.

## KEY FEATURES

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



## 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)

\*Additional sizes available; Minimum order quantities may apply to items not listed in table.

Size*	Cellulose 7100	Glass ET/MG160	Quartz ET/MK360
19x90		E160-1990	
22x80	7100-2280	E160-2280	
25x100			E360-2500
25x80	7100-2580		
26x60	7100-2660		
30x100	7100-3000	E160-3010	
30x80	7100-3080		
33x100	7100-3300		
33x80	7100-3380		
33x94	7100-3394	E160-3394	
43x123	7100-4323		E360-4323



# Specimen Collection Cards

Ahlstrom-Munksjö Specimen Collection Card portfolio offers simple and cost-effective collection, transportation and storage of biosamples at ambient temperature. It brings efficiency and simplicity to the biological fluids sampling process.



## Short-Term Storage Needs

### Ahlstrom-Munksjö GenCollect™ and Ahlstrom-Munksjö GenCollect™ Color

**Applications:** PCR and quantitative PCR, STR & NGS genotyping, Genomics, Human identification, Animal identification, Plasmid screening.

GenCollect™ and GenCollect™ Color offer simple and cost effective collection of biosamples for preservation and short-term storage of DNA. These cards are designed for efficient extraction and purification of DNA. These products are chemical free and manufactured according to the highest standards, in order to eliminate possible interferences from chemical treatment and allowing higher extraction yield. Handling at ambient temperature for best results. **GenCollect™ 2.0** cards offer additional features: these cards offer additional features allowing direct amplification of DNA from a paper disc and preventing the growth of microorganisms during the short-term storage at ambient temperature.



## Long-Term Storage Needs

### Ahlstrom-Munksjö GenSaver™ and Ahlstrom-Munksjö GenSaver™ Color

**Applications:** direct-multiplex PCR and quantitative PCR, STR & NGS genotyping, Genomics, Human identification, Animal identification, Plasmid screening.

These cards are treated with a new-to-market proprietary chemistry. Best suited for long-term preservation of genomic DNA from blood and saliva samples. Stabilizing chemistry prevents environmentally induced degradation. The treated cards allow the stabilization of DNA for twenty years. **GenSaver™ 2.0** cards offer additional features: these cards offer additional features in order to prevent the growth of microorganisms thus eliminating risks of biological contamination of the collected samples during the long-term storage.

# Environmental Testing Standards

Ahlstrom-Munksjö products are suitable for many standard test methods used in analyzing air, water, and soil.

Standard	Test Method	Title	Recommended Grade	Application
ASTM	D425-88	Test Method for Centrifuge Moisture Equivalent of Soils	909	Soil
ASTM	D4767-11	Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils	55	Soil
ASTM	D5084-10	Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter	55	Soil
ASTM	E1963-09	Standard Guide for Conducting Terrestrial Plant Toxicity Tests: Root Elongation	601	Soil, Water
STM	2530	Particulate Floatables	131	Water
STM	2540.C	Total Dissolved, Suspended, Fixed and Volatile Solids	161 or 169	Water
STM	2710.B,D,E	Tests on Sludges: Oxygen Consumption Rate, Sludge Volume Index, Zone Settling Rate	161 or 169	Sludge
STM	2710.G	Tests on Sludges: Capillary Suction Time	243	Sludge
STM	2710.H	Tests on Sludges: Time-to-Filter	601 or 642	Sludge
STM	3500-Fe	Iron detection: Phenanthroline Method	161	Water
STM	3500-Li	Lithium Detection: Flame Emission Photometric Method	74	Water
STM	3500-Pb	Lead Detection: Dithizone Method	94 and 55	Water
STM	3500-Se	Selenium Detection: Colorimetric Method	94	Water
STM	3500-V	Vanadium Detection: Gallic Acid Method	94	Water
STM	4500-PC	Phosphorus in Water: Colorimetric Method	164 and 94	Water
STM	5510.B	Aquatic Humic Substances DEAE Method	601	Soil
STM	5520.B,C,D	Oil and Grease: Partition-Gravimetric, Partition-Infrared, and Soxhlet Extraction Methods	74	Water
STM	5910	UV-Absorbing Organic Constituents	161	Water
STM	6651	Glyphosate Herbicide	601	Water
STM	7110.C	Gross Alpha and Gross Beta Radioactivity	161	Water
STM	7500-Ra	Radium Detection: Precipitation Method	169	Water
STM	7500-Sr	Strontium Detection: Precipitation Method	94 or 169	Water
STM	8111.D	Biostimulation (Algal Productivity)	161	Water
STM	8310.D	Ciliated Protozoa: Growth Inhibition Test	601	Water
STM	9213	Recreational Waters	222, ReliaDisc™ gridded CN (MCE) membranes	Water
STM	9222	Membrane Filter Technique for Members of the Coliform Group	222, ReliaDisc™ gridded CN (MCE) membranes	Water
40CFR60 App A	Method 5	Determination of Particulate Matter Emissions from Stationary Sources	161, MK360	Air emissions
40CFR60 App A	Method 17	Determination of Particulate Matter Emissions from Stationary Sources	111, ET/MG160	Air emissions
40CFR62 App A	Method 201	Determination of PM10 Emissions (Exhaust Gas Recycle Procedure)	161, MK360	Air emissions
40CFR SW-846	Method 1311	Toxicity Characteristic Leaching Procedure	151, 193, 26	Sludge

The grade recommendations presented are made based on the methods as described in the standard, which may include suggestions of filter type, or on knowledge of current usage. All users must make their own determinations and comparisons as to the suitability of any products for their intended end-use.

## Ahlstrom-Munksjö Distributor Brand Cross Reference Guide\*

Conversion tables are provided to guide you in selecting the Ahlstrom-Munksjö 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.

### GE Whatman to Ahlstrom-Munksjö

GE Whatman Grade	Ahlstrom-Munksjö Grade	GE Whatman Grade	Ahlstrom-Munksjö Grade
1, 1CHR	601	598	238
2, 2 CHR, 20 CHR	642	602	610
2V	542	604	631
3, 3CHR	237	605	950
3MM	238	740E	222
4, 4CHR	631	801	513
5	610	802	515
6	950	903	226/TFM
17CHR	243	GF/A	111
31ETCHR	222	GF/B	121
40	74	GF/C	131
41	54	GF/D	141
42	94	GF/F	151
50	391	Student Grade	613
52	392	BFC 180	226
54	388	Benchkote	Polyshield 4002
91	909	TSS	161
113	961	934-AH	161/169
114	962	1573 1/2	505
114V	562	1574	909
200	950	1575	950
201	909	GF30	161
202	962	Sharkskin	992
230	961	TCLP	151
410	962	IPS	480
470	222	QM-A	MK5
540	75	QM-H	MK360
541	55		
542	95		
551	8613		
589/1	54		
589/2	74		
589/3	94		
589/4	74		
589/5	95		
591	237		
593	601		
595	631		
597	601		

### Machery-Nagel to Ahlstrom-Munksjö

Machery-Nagel Grade	Ahlstrom-Munksjö 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

### LabExact to Ahlstrom-Munksjö

LabExact Grade	Ahlstrom-Munksjö Grade
CFP1	601
CFP2	642
CFP3	237
CFP4	631
CFP5	610
CFP6	950
CFP40	74
CFP41	54
CFP42	94
CFP43	74
CFP44	94
CFP52	75
CFP114	962
CFP1654	222
A	111
B	121
C	131
D	141
F	151
A-E	161
TSS	161

### Advantec to Ahlstrom-Munksjö

Advantec Grade	Ahlstrom-Munksjö 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

### Fisher Scientific to Ahlstrom-Munksjö

Fisher Grade	Ahlstrom-Munksjö 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

### VWR to Ahlstrom

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

### Munktell to Ahlstrom-Munksjö

Munktell Grade	Ahlstrom-Munksjö Grade	Munktell Grade	Ahlstrom-Munksjö Grade
006	94	601/N	909
00A	74	1001	950
00H	94	1002	909
00K	74	1003	631
00M	54	1288	631
00R	54	1289	909
no. 1	601	1290	950
1F	601	1291	950
no. 2	642	1293	610
3	631	1357	4002
3 m/N	613	BF1	601
37/N	961	BF2	238
39/N	963	BF3	222
3 hw	613	FN1	631
3 m/N	613	FN2	631
3 S/H	237	FN3	601
4b	613	FN4	642
6	962	FN5	610
6 S/N	961	FN6	642
17	961	FN7a	237
41b	962	FN8	222
55/N	962	FN30	243
67/N	962	FN100	238
120H	610	Labsorb	Polyshield
150	642	MG 550-HA	169
151	243	MGA	111
195	8001	MGB	121
196	8002	MGC	131
292	601	MGD	141
293	610	MGF	151

\*The comparative data included herein is based on publicly available information and/or Ahlstrom-Munksjö'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.

Ahlstrom-Munksjö is a global leader in fiber-based materials, supplying innovative and sustainable solutions to customers worldwide. Our offerings include decor paper, filter media, release liners, abrasive backings, nonwovens, electrotechnical paper, glass fiber materials, food packaging and labeling, tape, medical fiber materials and solutions for diagnostics. Combined annual net sales are about EUR 2.15 billion and we employ 6,000 people. The Ahlstrom-Munksjö share is listed on the Nasdaq Helsinki and Stockholm. The company was formed on April 1,

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**Севастополь** (8692)22-31-93  
**Симферополь** (3652)67-13-56  
**Смоленск** (4812)29-41-54  
**Сочи** (862)225-72-31  
**Ставрополь** (8652)20-65-13

**Сургут** (3462)77-98-35  
**Тверь** (4822)63-31-35  
**Томск** (3822)98-41-53  
**Тула** (4872)74-02-29  
**Тюмень** (3452)66-21-18  
**Ульяновск** (8422)24-23-59  
**Уфа** (347)229-48-12  
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