

## Qualitative Filter Papers

- **100% alpha cotton cellulose**
- **pH tolerant 0 to 12**
- **Temperature maximum 120°C**
- **Wide selection** – seven types
- **Ash Content: 0.1%**

### APPLICATIONS

- Clarify and remove precipitates
- Preparation for qualitative analysis

### ORDERING INFORMATION

See page 34.



Seven grades of qualitative filter papers are available.

## CHARACTERISTICS AND APPLICATIONS: CONVERSIONS – QUALITATIVE PAPERS

Grade	Comments	Weight (g/m <sup>2</sup> )	Thickness (mm)	Flow Time <sup>1</sup> (sec)	Absorption speed <sup>2</sup> (cm)	Wet Strength <sup>3</sup> (cm H <sub>2</sub> O)	Retention Characteristic (µm)	Collection Efficiency (% 0.3 µm DOP)	Conversion <sup>4</sup>	
									Whatman	Schleicher & Schuell
No. 1	Retains large crystalline particles and gelatinous precipitates. Fast flow rate, smooth surface, normal hardness	90	0.20	45	9.0	14.3	6 Coarse	65	1	410 or 1450cv
No. 2	Retains medium crystalline precipitates, fast flow rate, smooth surface, normal hardness	125	0.26	80	8.0	17.3	5 Medium	80	2	604
No. 231	Retains crystalline precipitates, moderate flow rate, smooth surface, normal hardness	95	0.18	130	7.5	-	Medium	-	1	-
No. 232	Retains medium to medium-fine particulates, slow flow rate, smooth, normal hardness	90	0.18	250	5.0	-	Med./Med.-Fine	-	-	-
No. 131	High retention efficiency for fine crystalline precipitates like barium sulfate, slow flow rate, smooth surface, normal hardness	140	0.25	240	6.0	19.4	3 Med.-Fine	90	3 or 6	597
No. 235	Highest retention efficiency, retains very fine particulates, very slow flow rate, smooth	95	0.17	1200	4.0	-	Very Fine	-	5	-
No. 101	Seed germination, retains large particles	80	0.21	50	8.0	14.3	6-7 Coarse and gelatinous	-	4	-

1. Flow time is the time in seconds required to filter 100 mL of distilled water at 20°C under pressure supplied by a 10 cm water column through a 10 cm<sup>2</sup> section of filter paper.

2. Absorption speed is the distance in cm that water will travel in an upright strip of filter paper in ten (10) minutes at 20°C.

3. Wet strength is the height in cm of a water column that will rupture a 10 cm<sup>2</sup> section of filter paper.

4. Conversions between manufacturers are not absolute. Use these conversions as a guideline.

## Quantitative Filter Papers

- **Highest quality** alpha cotton cellulose
- **Ash Content:** 0.01%
- **Acid washed:** Double acid washed in hydrochloric then hydrofluoric acid (No. 3, 5A, 5B, 5C, 6), then rinsed with ultrapure water to neutralize. No. 4A is further treated with nitric acid before washing

## APPLICATIONS

- Gravimetric analysis
- Environmental monitoring



Seven quantitative filter papers are available.

## CHARACTERISTICS AND APPLICATIONS: CONVERSIONS – QUANTITATIVE PAPERS

Grade	Comments	Weight (g/m <sup>2</sup> )	Thickness (mm)	Flow Time <sup>1</sup> (sec)	Absorption speed <sup>2</sup> (cm)	Wet Strength <sup>3</sup> (cm H <sub>2</sub> O)	Retention Characteristic (µm)	Collection Efficiency (%; 0.3 µm DOP)	Conversion <sup>4</sup>	
									Whatman	Schleicher & Schuell
No. 3 Ashless	Medium retention (5-10 µm), fast flow rate Analysis of soils, fertilizers, cement, and minerals	113	0.23	130	7.5	19.4	5 Medium	80	6	593-A
No. 5A Ashless	Fast flow rate, retains coarse particulates and gelatinous precipitates (>10 µm). Filter hydroxides and metallic aerosols, environmental monitoring, determine silica content in steel	97	0.22	60	9.5	14.3	7 Coarse and gelatinous	75	41	589-IH
No. 5B Ashless	Retains medium particles (5-10 µm) such as CaCO <sub>3</sub> , PbSO <sub>4</sub> , CaCO <sub>4</sub> , MnCO <sub>3</sub> , ZnCO <sub>3</sub> , ZnS, AgCl	108	0.21	195	7.0	19.4	4 Medium	90	40	598 Green
No. 5C Ashless	Collect fine precipitates (<5 µm) such as SrSO <sub>4</sub> , BaSO <sub>4</sub> , HgCrO <sub>4</sub> , and colloidal dispersions; gravimetric analysis	118	0.22	570	6.0	24.5	1 Fine	93	42	589 Blue
No. 6 Ashless	Retains medium-fine particulates (2-10 µm), trace and precious metals	103	0.20	300	6.0	14.3	3 Medium Fine	90	42	589 White
No. 7 Ashless	Highest purity for retaining medium particles (5-10 µm), precise gravimetric analysis	87	0.18	200	7.0	11.2	4 Medium	85	40, 43 or 540	-
No. 4A Hardened Ashless	High wet strength, suitable for use under high pressure, high chemical and pH resistance, retains fine crystalline precipitates (<5 µm), slow flow	96	0.12	915	4.0	89.7	1 Very Fine	90	50	-

Footnotes: See facing page

**Ash content of Quantitative Papers (mg per disk)**

cm	No.3	No.5A	No.5B	No.5C	No.6	No.7
5.5	0.03	0.02	0.03	0.03	0.02	0.02
7.0	0.04	0.04	0.04	0.05	0.04	0.03
9.0	0.07	0.06	0.07	0.08	0.07	0.06
11.0	0.11	0.09	0.10	0.11	0.10	0.08
12.5	0.14	0.12	0.13	0.15	0.13	0.11
15.0	0.20	0.17	0.19	0.21	0.18	0.15
18.5	0.30	0.26	0.29	0.32	0.28	0.23

**Metal Content**

(µg/g)	Si	Na	K	Ca	Mg	Fe	Pb	Cu	Mn	Ni	Al	Zn	Cd
Qualitative	46	62	3	140	17	<5	<1	<1	<1	<1	<2	1	<0.5
Quantitative	32	<10	<2	<10	<1	8	<1	<1	<0.5	<1	2	<1	<0.5

**ORDERING INFORMATION: QUALITATIVE PAPERS**

Available in disks in the following diameters (cm): 4.25, 5.5, 7.0, 9.0, 11.0, 12.5, 15.0, 18.5, 24.0, 28.5, 30.0, 33.0, 36.0, 40.0, 50.0, 60.0
Additional sizes available upon request.
Order by specifying first the grade of filter then the diameter, e.g. N0112.5CM (No.1, 12.5 cm), N02325.5CM (No.232, 5.5 cm)
Package of 100

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Available in disks in the following diameters (cm): 5.5, 7.0, 9.0, 11.0, 12.5, 15.0, 18.5
Additional sizes available upon request.
Order by specifying first the grade of filter then the diameter, e.g. N05A12.5CM (No.5A,12.5 cm), N065.5CM (No.6, 5.5 cm)
Package of 100