

Glass and Quartz Microfiber Filter Paper Overview

Key: light grey= Glass microfiber

Dark Grey= quartz microfibre

Whatman Grade	Equivalent Camlab Grade	Nominal Pore Size (µm)	Common Applications
GF/A	Grade 259	1.6	<ul style="list-style-type: none"> – Water pollution monitoring – Filtration of water – Food stuff analysis, protein filtration – Radioimmunoassay of weak B emitters – Particulate air pollution monitoring (PM2.5 & PM10 for gravimetric and organic determination)
GF/B	Grade 260	1	<ul style="list-style-type: none"> – Membrane pre-filter – Liquid clarification and solids quantification where suspensions are heavily loaded with fine particles.
GF/C	Grade 261	1.2	<ul style="list-style-type: none"> – Total suspended solids analysis (EN 872) – also available in a ready to use format – Clarification of liquids with low to medium levels of fine particulates – Cell harvesting – Liquid scintillation counting – Binding assays
GF/D	Grade 262	2.7	<ul style="list-style-type: none"> – Pre-filter for membrane filters (often used in combination with GF/B but can also be used in combination with GF/F as a pre-filter for clarification of difficult biochemical solutions).
GF/F	Grade 263	0.7	<ul style="list-style-type: none"> – DNA & protein filtration & purification – Use with GF/D as a pre-filter for clarification of ‘difficult’ biochemical solutions – Landfill leachate toxicity testing (US EPA TCLP 1311)
934-AH	Grade 264	1.5	<ul style="list-style-type: none"> – Total suspended and dissolved solids and volatiles analysis - available in a ready to use format – Removal of turbidity in water – Filtration of bacterial cultures – Air pollution particulate monitoring
GMF-150		1 or 2	<ul style="list-style-type: none"> – Pre-filter for membrane filtration giving higher particulate loading capacity with faster flow rates
EPM 2000		-	<ul style="list-style-type: none"> – High volume particulate air sampling (US EPA method for PM10)
QM-A	Grade 293		<ul style="list-style-type: none"> – Air sampling in acidic gases, stacks, flues and aerosols at high temperatures – Air particulate monitoring (PM2.5/PM10)
QM-B			<ul style="list-style-type: none"> – Similar to QM-A, QM-B is thicker and has a higher loading capacity
QM-H			<ul style="list-style-type: none"> – High temperature applications over 900°C

Glass microfiber filter papers are widely used in many different industries for routine applications such as filtering large particulates and as a pre-filter for membrane filtration. They are manufactured from borosilicate glass microfibers and are available both containing binders and binder-free. This overview will cover binder-free papers only. Quartz microfiber filters are made from micro-quartz fibres and their main application of use is in air and smoke monitoring

Comparison with Cellulose filter papers

Glass microfiber filters and cellulose filters have some cross over in the types of applications they are used in. Due to their very fine microfibers, glass microfiber papers offer greater levels of particle retention (micro-filtration) due to their smaller pore sizes, when compared with cellulose filter papers.

They are suitable for more high loading applications and have a much greater temperature resistance. Binder-free glass microfiber papers can be used in gravimetric analyses as can quantitative cellulose papers.

Features & Properties of glass and quartz microfiber filters:

- High temperature resistance (up to about 500°C for glass and 900°C for Quartz)
- High chemical resistance to various solvents (note: not resistant to HF acid)
- High particle retention and load capacity
- Cannot be folded so when used in a funnel, you must use it flat in a Buchner funnel
- Non-hygroscopic and biologically inert
- High permeability against passing air

Commonly used applications

- **Vacuum filtration (e.g. Buchner filtration)** – where high loading and fine particle retention is required. Select the most appropriate paper based on pore size (From grades: GF/A, GF/B, GF/C, GF/D/ GF/F, 934-AH). Specific applications include: industrial water filtration, solvent filtration and biological sample filtration.
- **Suspended solids in water analysis** (according to EN 872 use Whatman grade GF/C).
- **Air quality Testing** – GF/A, QM Quartz grades, EPM-2000
- **As a pre-filter for membrane filters** – for samples with a high particle loading so the membrane filters do not get clogged – GMF-150, GF/B, GF/D
- **Gravimetric analysis** – such as of volatile materials where ignition is involved (due to their high temperature range).