



Laboratory

## Air Monitoring and Sampling Filtration Products

Membrane discs and filter holders designed specifically  
for environmental air applications



Air quality is a concern worldwide due to its known impact on health and environmental issues. Globally, government regulators set standards to control pollution in the air we breathe. Pall began research on the development and production of filters for air sampling and analysis more than 60 years ago. We are now one of the world's largest suppliers of membranes and glass fiber filters designed specifically for environmental monitoring and testing.

As knowledge about the impact of industrial by-products and the need for monitoring have increased, so has Pall's commitment to supplying products for air analysis. You will find Pall environmental testing products referenced and recommended by regulatory agencies worldwide for air monitoring and hazardous waste analysis of both organic and inorganic matrices.

For the most accurate results in your air analysis, use this guide to select the membrane or filter media optimized for your application. Then choose from our wide selection of complementary products, including filter holders, cassettes, and convenient accessory products.

## Air Monitoring Cassettes and Accessories

### 25 mm Air Monitoring Cassettes



Conductive, non-static cowl prevents adherence of particles to cassette walls for more accurate analysis

- ▶ 0.8 µm GN-4 Metrical® (mixed cellulose esters) membrane has a low fiber background count. It is widely accepted for air monitoring of fibers, asbestos fibers, and metals, and complies with NIOSH Methods 7400 and 7402.
- ▶ Can be used to monitor respirable constituents such as silica, metal, and dusts.
- ▶ Leak proof and tamper resistant. Banded cassettes assure air-tight seal for critical applications.
- ▶ Consistent performance. 100% inspected for complete membrane assembly and secure unit sealing.

### Analyslide® Petri Dish



Like a Petri dish on a slide

- ▶ Stores disc filters and protects filter integrity during microscopic examination.
- ▶ Rectangular base fits most microscope stages.
- ▶ Inner cover ring for air-tight securing of sample does not interfere with viewing.
- ▶ Frosted area on base permits identification of the sample with pencil or marker.
- ▶ Convenient packaging simplifies collecting samples in the field.

### 37 mm Air Monitoring Cassettes



GN-4 Metrical membrane assures consistent performance for industrial hygiene sampling

- ▶ Designed to meet NIOSH and other regulatory requirements for industrial hygiene sampling using vacuum filtration.
- ▶ Widely accepted for air monitoring of fibers, asbestos fibers, and metals.
- ▶ For open- or closed-face monitoring methods.
- ▶ 0.8 µm GN-4 Metrical membrane has a low fiber background count.
- ▶ Leak proof cassettes are available in two or three-piece units.







### Stainless Steel Forceps



Make filter handling easy







- ▶ Tips have a flat, smooth surface.
- ▶ Polypropylene finger grips provide a comfortable, secure hold.
- ▶ Choose traditional black or multicolored finger grips. Bright colors make forceps easy to identify, track, and see on the lab bench.

## Filter Holders

| Product  | Materials of Construction  | Inlet/Outlet Connections   |
|--|--|--|
| <b>13 mm Plastic Swinney Filter Holder</b><br>                 | Inlet/Outlet Housing and Support Screen: Celcon© (acetal copolymer)<br>Seal Washer: PTFE   | Female threaded luer inlet, male slip luer outlet  |
| <b>25 mm In-line Filter Holder, Delrin© Plastic</b><br>        | Body: Delrin (acetal resin)<br>Hose Barb Adapters: Nylon<br>O-ring: Viton©<br>Support Screen: Type 316 stainless steel   | 1/8 in. FNPT; hose barb adapter accepts 6.4 mm (1/4 in.) ID tubing   |
| <b>47 mm In-line Filter Holder, Polycarbonate</b><br>          | Body: Polycarbonate<br>Hose Barb Adapters: Nylon<br>Support Screen: Polyphenylsulfone<br>O-ring: Silicone<br>Vent Cap: Polypropylene   | 1/4 in. -18 FNPT; hose barb adapters accept 6.4 mm (1/4 in.) ID tubing   |
| <b>47 mm In-line Filter Holder, Aluminum</b><br>              | Body: Anodized aluminum<br>Hose Barb Adapters: Polyethylene<br>Support Screen, Underdrain Disc: Electropolished type 316 stainless steel<br>O-ring: Viton<br>Thrust Ring: PTFE   | 3/8 in. FNPT; hose barb adapters accept 6.4 mm(1/4 in.) ID tubing  |
| <b>25, 37, and 47 mm Open-face Filter Holders</b><br>        | <i>Holder</i><br>25 mm: Delrin (acetal resin)<br>37 and 47 mm: Aluminum<br>Hose Barb Adapter: Nylon<br><br><i>Support Screen</i><br>25 mm: Type 316 stainless steel<br>37 and 47 mm: Type 304 stainless steel<br>O-ring: Viton<br>Cap, 37 and 47 mm: Polyethylene  | 1/8 in. -27 FNPT; includes 6.4 mm (1/4 in.) ID hose barb adapter   |
| <b>13, 25, and 47 mm Filter Holders, Stainless Steel</b><br> | <i>13 mm Swinney Stainless Steel</i><br>Body: Type 304 stainless steel<br>Gaskets: PTFE<br>Support Screen: Photoetched type 304 stainless steel<br><br><i>25 mm In-line Stainless Steel</i><br>Body, Underdrain Disc, and Support Screen: Type 316 stainless steel<br>Hose Barb Adapters: Nylon<br>Center Ring Collar: Type 303 stainless steel<br>O-ring: Viton<br><br><i>47 mm In-line Stainless Steel</i><br>Body: Type 316 stainless steel<br>Hose Barb Adapters: Polyethylene<br>Support Screen and Underdrain Disc: Electropolished type 316 stainless steel<br>O-ring: Viton<br>Thrust Ring: PTFE<br>Center Ring Collar: Type 303 stainless steel | Standard female luer lock inlet, male slip luer outlet<br><br>1/8 in. FNPT; hose barb adapters accept 6.4 mm (1/4 in.) ID tubing<br><br>3/8 in. FNPT; hose barb adapters accept 6.4 mm (1/4 in.) ID tubing |



## Filters Optimized for Your Sampling Applications

|  |    |    |   |
|--|---|--|--|
| <b>Media</b>   | <b>A/E Glass Fiber</b>  | <b>GLA-5000 PVC Membrane</b>   | <b>GN-4 Metrice MCE Membrane</b>   |
| <b>Description</b>   | Binder-free borosilicate glass fiber is recommended by EPA for high-volume air sampling to collect atmospheric particles and aerosols.  | 5 µm polyvinyl chloride (PVC) filters feature low ash, low moisture pickup, light tare weight, and are gravimetrically stable. Ideally suited for multiple NIOSH analytical methods including silica monitoring. | GN-4 (0.8 µm) Metrice membranes are mixed cellulose esters that dissolve completely using standard digestion procedures. These membranes clear completely, possess low artifacts, and offer minimal interference in fiber counting.                                  |
| <b>Filter Media</b>  | Borosilicate glass without binder   | Polyvinyl chloride (PVC)   | Hydrophilic mixed cellulose esters   |
| <b>Pore Size</b>   | 1 µm (nominal)  | 5 µm   | 0.8 µm   |
| <b>Typical Filter Thickness</b>  | 330 µm (13 mils)  | N/A  | 152 µm (6 mils)  |
| <b>Typical Filter Weight</b>   | N/A   | N/A  | 4 mg/cm <sup>2</sup>   |
| <b>Typical Aerosol Retention</b><br>Following ASTM D 2986-95A<br>0.3 µm (DOP) at 32 L/min/<br>100 cm <sup>2</sup> filter media | 99.98%  | 99.94%   | N/A  |
| <b>Typical Air Flow Rate</b>   | 60 L/min/cm <sup>2</sup> at 0.7 bar<br>(70 kPa, 10 psi)   | 53 L/min/cm <sup>2</sup> at 0.7 bar<br>(70 kPa, 10 psi)  | 55 L/min/3.7 cm <sup>2</sup> at 0.9 bar<br>(90 kPa, 13.5 psi)  |
| <b>Typical Water Flow Rate</b>   | 250 mL/min/cm <sup>2</sup> at 0.3 bar<br>(30 kPa, 5 psi)  | N/A  | 129 mL/min/cm <sup>2</sup> at 0.7 bar<br>(70 kPa, 10 psi)  |
| <b>Maximum Operating Temperature</b>   | Air<br>550 °C (1022 °F)   | Water<br>52 °C (125 °F)  | Water<br>74 °C (165 °F)  |
|  |    |    |   |
| <b>Media</b>   | <b>Pallflex® Emfab™ Filters</b>   | <b>Pallflex Tissuquartz™ Filters</b>   | <b>Teflo Membrane</b>  |
| <b>Description</b>   | Borosilicate microfibers reinforced with woven glass cloth and bonded with PTFE. Flushed with DI water to remove water-soluble residue. Low moisture and low air resistance. Withstands folding for weighing and transport. Preferred filter for ambient air sampling and stack emission testing. | Binder-free pure quartz offers superior chemical purity. High flow rate and filtration efficiency. Uniquely designed for air monitoring in high temperatures and aggressive atmospheres.                         | PTFE with unique polymethylpentene (PMP) support ring for PM-10 dichotomous, PM-2.5, and other air sampling techniques. Offers increased durability and low chemical background for X-ray fluorescence, radiometric or gravimetric techniques of elemental analysis. |
| <b>Filter Media</b>  | Borosilicate glass microfibers reinforced with woven glass cloth and bonded with PTFE   | Pure quartz, no binder   | PTFE with PMP (polymethylpentene) support ring   |
| <b>Pore Size</b>   | N/A   | N/A  | 1, 2, and 3 µm   |
| <b>Typical Filter Thickness</b>  | 178 µm (7 mils)   | 432 µm (17 mils)   | 1 µm: 76 µm (3 mils)<br>2 µm: 46 µm (1.8 mils)<br>3 µm: 30.4 µm (1.2 mils)   |
| <b>Typical Filter Weight</b>   | 5.0 mg/cm <sup>2</sup>  | 5.8 mg/cm <sup>2</sup>   | N/A  |
| <b>Typical Aerosol Retention</b><br>Following ASTM D 2986-95A<br>0.3 µm (DOP) at 32 L/min/<br>100 cm <sup>2</sup> filter media | 99.95%  | 99.90%   | 1 and 2 µm: 99.99%<br>3 µm: 99.79%   |
| <b>Typical Air Flow Rate</b>   | 68 L/min/cm <sup>2</sup> at 0.7 bar<br>(70 kPa, 10 psi)   | 73 L/min/cm <sup>2</sup> at 0.7 bar<br>(70 kPa, 10 psi)  | L/min/cm <sup>2</sup> at 0.7 bar<br>(70 kPa, 10 psi)<br>1 µm: 17<br>2 µm: 53<br>3 µm: 90   |
| <b>Typical Water Flow Rate</b>   | 32 mL/min/cm <sup>2</sup> at 0.35 bar<br>(35 kPa, 5 psi)  | 220 mL/min/cm <sup>2</sup> at<br>0.35 bar (35 kPa, 5 psi)  | N/A  |
| <b>Maximum Operating Temperature</b>   | Air<br>260 °C (500 °F)  | Air<br>1093 °C (2000 °F)   | N/A  |

See [www.pall.com/lab](http://www.pall.com/lab) for additional product specifications.

## Ordering Information

### 25 mm Air Monitoring Cassettes

| Part Number | Description  | Pkg     |
|-------------|--|---------|
| 4382        | Three-piece unit with GN-4 Metrical membrane and support pad, banded | 50/pkg  |
| 4376        | Three-piece unit, unassembled  | 50/pkg  |
| 66238       | 25 mm support pads, non-sterile                                      | 100/pkg |

### 37 mm Air Monitoring Cassettes

| Part Number | Description  | Pkg     |
|-------------|--|---------|
| 4338        | Two-piece unit, unassembled                                  | 100/pkg |
| 4339        | Three-piece unit, unassembled                                | 100/pkg |
| 4336        | Three-piece unit with GN-4 Metrical membrane and support pad | 50/pkg  |
| 66239       | 37 mm support pads, non-sterile                              | 100/pkg |
| 64747       | 37 mm support pads, non-sterile                              | 500/pkg |

### Analyslide Petri Dish

| Part Number | Description           | Pkg     |
|-------------|-----------------------|---------|
| 7231        | Analyslide petri dish | 100/pkg |

### Stainless Steel Forceps

| Part Number | Description   | Pkg   |
|-------------|---|-------|
| 51147       | Stainless steel forceps, black grips  | 1/pkg |
| 4690        | Stainless steel forceps, multi-colored grips (1 each of orange, blue, chartreuse) | 3/pkg |

### 13 mm Plastic Swinney Filter Holder

| Part Number | Description            | Pkg   |
|-------------|------------------------|-------|
| 4317        | 13 mm, plastic Swinney | 5/pkg |

### 25 mm In-line Filter Holder, Delrin Plastic

| Part Number | Description    | Pkg   |
|-------------|----------------|-------|
| 1109        | 25 mm, in-line | 6/pkg |

### 47 mm In-line Filter Holder, Polycarbonate

| Part Number | Description                  | Pkg   |
|-------------|------------------------------|-------|
| 1119        | 47 mm, in-line polycarbonate | 1/pkg |

### 47 mm In-line Filter Holder, Aluminum

| Part Number | Description             | Pkg   |
|-------------|-------------------------|-------|
| 1235        | 47 mm, in-line aluminum | 1/pkg |

### 25, 37, and 47 mm Open-face Filter Holders

| Part Number | Description                     | Pkg   |
|-------------|---------------------------------|-------|
| 1107        | 25 mm, open-face Delrin plastic | 6/pkg |
| 1220        | 47 mm, open-face aluminum       | 1/pkg |

### 13, 25, and 47 mm Filter Holders, Stainless Steel

| Part Number | Description                   | Pkg   |
|-------------|-------------------------------|-------|
| 4042        | 13 mm stainless steel Swinney | 1/pkg |
| 1209        | 25 mm stainless steel         | 1/pkg |
| 2220        | 47 mm stainless steel         | 1/pkg |

### A/E Glass Fiber Filters

| Part Number | Description | Pkg     |
|-------------|-------------|---------|
| 61630       | 25 mm       | 500/pkg |
| 61652       | 37 mm       | 500/pkg |
| 61631       | 47 mm       | 100/pkg |
| 61632       | 50 mm       | 100/pkg |
| 61663       | 76 mm       | 100/pkg |
| 60010       | 81 mm       | 100/pkg |
| 60127       | 82.5 mm     | 100/pkg |
| 61664       | 90 mm       | 100/pkg |
| 61633       | 102 mm      | 100/pkg |
| 61655       | 124 mm      | 100/pkg |
| 66559       | 142 mm      | 25/pkg  |
| 61635       | 142 mm      | 100/pkg |
| 61638       | 8 x 10 in.  | 100/pkg |

### GLA-5000 PVC Membrane

| Part Number | Description              | Pkg     |
|-------------|--------------------------|---------|
| 66466       | 25 mm                    | 100/pkg |
| 66469       | 37 mm                    | 100/pkg |
| 66467       | 37 mm, with support pads | 100/pkg |
| 66468       | 47 mm                    | 100/pkg |

### GN-4 Metrical MCE Membrane

| Part Number | Description                            | Pkg     |
|-------------|--|---------|
| 64677       | 25 mm, plain, with support pads        | 100/pkg |
| 66276       | 25 mm, grid, packaged in four cavities | 100/pkg |
| 64678       | 37 mm, plain, with support pads        | 100/pkg |
| 64679       | 47 mm, plain                           | 100/pkg |
| 66179       | 47 mm, grid                            | 100/pkg |

### Pallflex® Emfab Filters

| Part Number | Description            | Pkg     |
|-------------|------------------------|---------|
| 7219        | TX40HI20WW, 25 mm      | 100/pkg |
| 7217        | TX40HI20WW, 37 mm      | 100/pkg |
| 7221        | TX40HI20WW, 47 mm      | 100/pkg |
| 7222        | TX40HI20WW, 70 mm      | 100/pkg |
| 7218        | TX40HI20WW, 81 mm      | 100/pkg |
| 7234        | TX40HI20WW, 85 mm      | 100/pkg |
| 7223        | TX40HI20WW, 90 mm      | 100/pkg |
| 7225        | TX40HI20WW, 110 mm     | 100/pkg |
| 7224        | TX40HI20WW, 8 x 10 in. | 100/pkg |
| 7253        | TX40HI45, 82.6 mm      | 100/pkg |

## Ordering Information

### Pallflex Tissuquartz Filters

| Part Number | Description | Pkg     |
|-------------|-------------|---------|
| 7200        | 25 mm       | 100/pkg |
| 7201        | 37 mm       | 25/pkg  |
| 7202        | 47 mm       | 25/pkg  |
| 7205        | 82.6 mm     | 25/pkg  |
| 7206        | 85 mm       | 25/pkg  |
| 7187        | 87.5 mm     | 25/pkg  |
| 7203        | 90 mm       | 25/pkg  |
| 7207        | 102 mm      | 25/pkg  |
| 7250        | 110 mm      | 25/pkg  |
| 7204        | 8 x 10 in.  | 25/pkg  |

### Non-Heat-Treated Quartz Filters, 2500 QAO-UP

| Part Number | Description | Pkg    |
|-------------|-------------|--------|
| 7194        | 47 mm       | 25/pkg |

### Teflo Membrane

| Part Number | Description | Pkg    |
|-------------|-------------|--------|
| R2PJ037     | 2 µm, 37 mm | 50/pkg |
| R2PJ047     | 2 µm, 47 mm | 50/pkg |
| R2PI025     | 3 µm, 25 mm | 50/pkg |
| 60146       | 3 µm, 47 mm | 50/pkg |

## Air Analysis Applications

Proper product selection is critical to the integrity of your analysis. Pall's extensive manufacturing and development resources enable us to select the most appropriate materials, optimize them for each unique application, and provide superior products that ensure the most consistent, accurate results possible.

| Application                                 | Membranes  | Devices and Accessories   |
|---|--|---|
| Aggressive Environments/<br>Aerosol Testing | Tissuquartz and Emfab Membranes  | 47 mm In-line Filter Holders  |
| Asbestos/Fibers                             | GN-6 Metrical and<br>GN-4 Metrical Membranes   | 25 and 37 mm Air Monitoring Cassettes, 25 and 37 mm Support Pads,<br>Analyslide Petri Dish  |
| Diesel Fuel                                 | Emfab Membranes  | 47 mm In-line Filter Holders  |
| Gravimetric                                 | A/E Glass Fiber, GLA-5000, Zefluor,<br>DM Metrical, Emfab, Tissuquartz, and<br>Teflo Membranes | 37 mm Air Monitoring Cassettes, 25 mm Open-face Delrins Holder,<br>37 and 47 mm Open-face Aluminum Holders, Analyslide Petri Dish |
| Lead  | GN-4 Metrical Membrane   | 37 mm Air Monitoring Cassettes, 37 mm Support Pads  |
| Nuisance Dust                               | GLA-5000 and DM Metrical Membranes   | 37 mm Air Monitoring Cassettes, 37 mm Support Pads  |
| PM 10, PM 2.5                               | A/E Glass Fiber, Tissuquartz, and<br>Teflo Membranes   | Analyslide Petri Dish   |
| Silica                                      | GLA-5000, GN-4 Metrical, and<br>DM Metrical Membranes  | 37 mm Air Monitoring Cassettes, 37 mm Support Pads,<br>Analyslide Petri Dish  |

For more detailed information on how to select the correct filter for the specific NIOSH method you are using, visit our web site [www.Pall.com/lab](http://www.Pall.com/lab) or contact your local Pall Laboratory representative.



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