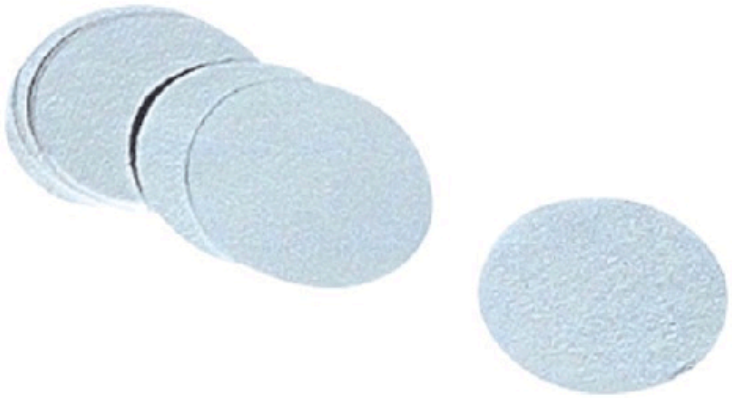


INSTRUCTIONS FOR USE

SKC Gelatin Filters

Storage and handling, loading the filter into a cassette, sampling airborne microorganisms for up to 30 minutes, preparing the sample for the laboratory, and the direct and indirect analysis methods for the SKC Gelatin Filters, Cat. Nos. 225-9551 and 225-9552.

AMTC-IN-0072

About this document

These instructions cover the SKC Gelatin Filters, Cat. Nos. 225-9551 and 225-9552: water-soluble filters for collecting airborne microorganisms. They tell you how to store and handle the filters, how to load a filter into a cassette and take a sample, how to prepare the sample for the laboratory, and how the laboratory analyses it.

Read Safety (p. 4) and Product and supplied items (p. 5) first, then follow Before use (p. 6) and Procedure (p. 7) step by step. After use and sample handling (p. 8) says how to prepare and ship the sample; its section Analysis (p. 8) is for your laboratory.

Keep these instructions for the lifetime of the product. The current revision is on the product page at analyt-mtc.com.

How these instructions mark information

NOTICE

Practices not related to personal injury — damage to the product, the process or the sample.

Note
Information that helps understanding; never a hazard.

Document information

Title	SKC Gelatin Filters — Instructions for use
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Rev.	Date	Change
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CHAPTER 1

Safety

Read this chapter before you use the filters. Its messages are repeated in the steps where they apply.

Intended use

SKC Gelatin Filters collect airborne microorganisms for their detection and analysis: bacteria, moulds and viruses. Use them for sampling periods of up to 30 minutes, at an air face velocity through the filter of no more than 0.4 m/s, at room temperatures up to 30 °C (86 °F) and relative humidities up to 85 %.

Protecting the filter and the sample

NOTICE

Do not store below 4 °C (39.2 °F). Condensation during thawing dissolves the filter. Store the filters at 4–8 °C (39.2–46.4 °F).

NOTICE

Moisture, chemical vapours and extreme temperatures can damage the gelatin filters. Keep the filters away from them, during storage and during shipping.

NOTICE

The filters are brittle. Gripping them too tightly or bending them breaks them, and fingers or other objects contaminate them. Handle the filters only with forceps, gently, and never touch them.

NOTICE

Load under sterile conditions only. A filter loaded outside sterile conditions can pick up microorganisms that are not from the air you sample, so the result is then invalid.

NOTICE

Prolonged sampling and a high air velocity may destroy the pores of the gelatin, and the collection efficiency of the filter then decreases. Do not sample for longer than 30 minutes or at an air face velocity above 0.4 m/s.

CHAPTER 2

Product and supplied items

SKC Gelatin Filters are water-soluble filters for the detection and analysis of airborne microbes. They retain bacteria and moulds and also collect viruses.

The filters collect airborne microorganisms quantitatively. Their inherently high moisture content helps keep stress-sensitive microorganisms viable for sampling periods of up to 30 minutes. After sampling, the gelatin dissolves easily in a buffer or on an agar medium, so the laboratory can detect the bacteria and viruses directly on a culture plate or from a solution (see Analysis (p. 8)).

Filter sizes

Diameter	Used in	Order code
25 mm	IOM Sampler, Button Sampler	225-9551
37 mm	37-mm filter cassette	225-9552

Each filter comes in its own pocket. Leave it in the pocket until you load it into the cassette.

Conditions of use

Room temperature	at most 30 °C (86 °F)
Relative humidity	at most 85 %
Sampling time	at most 30 minutes
Air face velocity through the filter	at most 0.4 m/s

CHAPTER 3

Before use

Storage and shelf life

Storage	4–8 °C (39.2–46.4 °F) recommended
Shelf life	see the expiry date on the packaging

NOTICE

Do not store below 4 °C (39.2 °F). Condensation during thawing dissolves the filter. Store the filters at 4–8 °C (39.2–46.4 °F).

NOTICE

Moisture, chemical vapours and extreme temperatures can damage the gelatin filters. Keep the filters away from them, during storage and during shipping.

Handling the filters

- Gelatin filters are brittle: handle them carefully.
- Do not touch the filters with your fingers or with any other object.
- Use forceps to handle the filters.
- Do not grip a filter too tightly with the forceps: it breaks.
- Do not bend the filters.
- Leave the filter in its pocket until you are ready to load it into a cassette.

Load the filter into a cassette

NOTICE

Load under sterile conditions only. A filter loaded outside sterile conditions can pick up microorganisms that are not from the air you sample, so the result is then invalid.

1. Take the cassette apart.
2. Let the gelatin filter slide carefully out of its pocket into the cassette.
3. Use forceps to help position the filter.
4. Put the cassette back together.
5. Connect the outlet of the cassette with flexible tubing to the inlet of an air sample pump that can deliver the flow rate you want.

The cassette is ready for sampling.

CHAPTER 4

Procedure

Sampling parameters

Sample for no more than 30 minutes, at an air face velocity through the filter of no more than 0.4 m/s. The nearer the air velocity is to 0.4 m/s, the shorter the sampling time must be; a lower air velocity allows a longer sampling time. The face velocity depends on the sampler, the filter diameter and the flow rate:

Table 4-1. Air face velocity for specific samplers and filter diameters

Sampler and filter	Flow rate	Air face velocity
IOM Sampler with 25-mm filter	2 L/min	0.08 m/s
Button Sampler with 25-mm filter	4 L/min	0.16 m/s
37-mm filter	2 L/min	0.035 m/s
	4 L/min	0.07 m/s
	10 L/min	0.17 m/s

Take the sample

Before you start, decide how the sample will be analysed, directly or indirectly, and so how you will prepare it for the laboratory (see Prepare the sample for the laboratory (p. 8)). For the direct method, choose the agar before you collect the sample.

NOTICE

Prolonged sampling and a high air velocity may destroy the pores of the gelatin, and the collection efficiency of the filter then decreases. Do not sample for longer than 30 minutes or at an air face velocity above 0.4 m/s.

1. Sample for the appropriate sampling period, up to 30 minutes; a brief sampling period helps reduce stress on the microorganisms.
2. Turn off the pump.

The sample is taken. Prepare it for the laboratory as described in the next chapter.

CHAPTER 5

After use and sample handling

Prepare the sample for the laboratory

There are two ways to prepare the sample. Choose one before you prepare the sample for shipment, by the analysis method the laboratory will use:

- **Method 1** prepares the sample for the indirect analysis method. Use it to ship the sample to a laboratory at another location.
- **Method 2** prepares the sample for the direct analysis method. Use it only if there is an on-site laboratory that can perform microbial analysis.

Method 1: dissolve the filter for shipping

NOTICE

Extreme temperatures can damage the sample. Avoid them during storage and shipping.

1. Take the cassette apart and gently remove the filter with forceps.
2. Place the filter in 10 mL of sterile water. 10 mL is recommended; add more water if needed.
3. When the filter has dissolved, pour the solution into a water-tight container or tube.
4. Seal the container and ship it to a laboratory for analysis.

Method 2: transfer the filter to agar on site

Note
Use this method only if there is an on-site laboratory. Determine the appropriate agar before you collect the sample.

1. Open the cassette.
2. Place the base of a prepared, agar-filled Petri dish over the filter in the cassette until the agar touches the filter. The gelatin filter adheres to the agar surface.
3. Carefully lift the base of the agar plate with the gelatin filter.
4. Cover the base of the Petri dish with its lid immediately.

The moisture of the agar culture medium dissolves the gelatin filter, so the microbes come into direct contact with the nutrient medium. The laboratory incubates the plates and counts the colonies.

Analysis

This section is for the laboratory: the direct and the indirect analysis method, the calculation of the result and the removal of disinfectants.

Direct method

> **Note**
> The direct method is not recommended for virus aerosols.

> **Note**
> To keep liquid from collecting on the agar surface, always use predried agar that is not freshly prepared.

1. After you have transferred the filter to the culture medium, put the Petri dish in an incubator with its lid facing up.
2. Choose the time, the temperature and the type of culture medium that suit the target microbes:
   - Standard, Caso or Plate Count Agar for the colony count (total CFU count);
   - Sabouraud, Malt Extract or Wort Agar for detecting yeasts and moulds;
   - Blood Agar for detecting pathogenic microbes that cause haemolysis.
3. Count the colonies that form.

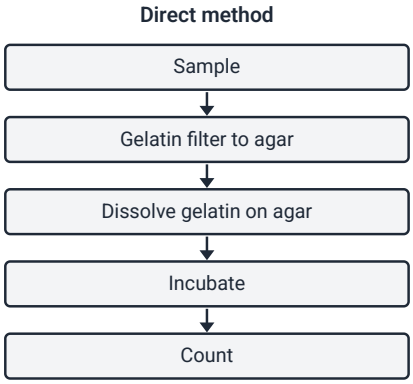


Figure 5-1. Direct method.

Indirect method

The indirect method dissolves the gelatin filter after sampling. It prevents osmotic shock to the sampled organisms, gives sub-samples for removing inhibitors such as disinfectants, allows the sample to be diluted where high counts are expected, and allows plating onto different nutrient media where the species must be identified.

1. Dissolve the gelatin filter in a sterile liquid warmed to 35–40 °C, such as physiological saline or 0.1 % peptone water.
2. Stir the solution with a sterile magnetic stirrer to dissolve the filter faster.
3. Process the solution by Koch's pour plate method or by the membrane filtration technique.
4. Incubate the samples.
5. Evaluate the colonies that form.

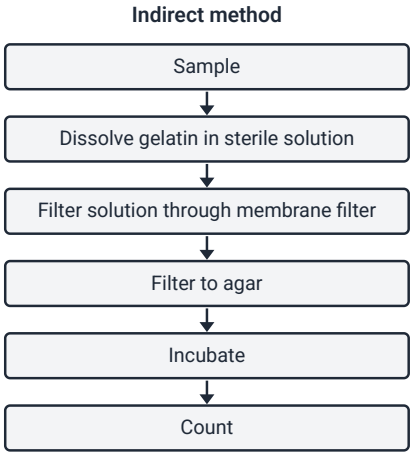


Figure 5-2. Indirect method.

Note
Dissolving and stirring separate the colony-forming units into individual microbes, so the indirect method gives a higher CFU count than placing the exposed filter directly on a culture medium (direct method).

Colony-forming units per cubic metre

To find the number of colony-forming units per cubic metre of air (CFU/m³), relate the number of colonies to the volume of air sampled.

Removing disinfectants

Note
The indirect method is strongly recommended for samples from an area sprayed with disinfectants or where airborne antibiotic particles are present. The indirect method lets you remove the disinfectants that inhibit the growth of microbes on the culture medium.

1. Dissolve the gelatin filter as described under Indirect method (p. 9), steps 1 and 2.
2. Before step 3 of the indirect method, filter the resulting liquid through a membrane filter of 0.45 µm pore size.
3. Rinse the membrane filter with sterile water.

Disposal

Dispose of used filters and their packaging under local regulations.

CHAPTER 6

Specifications

Performance profile

Material	water-soluble gelatin
Pore size	3.0 µm nominal. A higher capture efficiency for sub-micron particles can be expected from the separations on the surface and within the filter: by inertial impaction and diffusional interception the filters remove particles much smaller than 3.0 µm.
Diameter	25 or 37 mm
Thickness	approximately 250 µm
Thermal resistance	at most 60 °C (140 °F)
Residual moisture content	46–49 %
Maximum temperature and humidity	room temperature at most 30 °C (86 °F); relative humidity at most 85 %
Sterilisation	presterilised by gamma radiation
Maximum sampling time	30 minutes (see Sampling parameters (p. 7))
Storage	4–8 °C (39.2–46.4 °F) recommended; not below 4 °C (39.2 °F)
Shelf life	see the expiry date on the packaging
Analysis	direct or indirect method (see Analysis (p. 8))

CHAPTER 7

Ordering information

Order from Analyt-MTC with the order codes.

Description	Order code
Gelatin Filter, 25 mm*	225-9551
Gelatin Filter, 37 mm*	225-9552

* Limited shelf life: see the expiry date on the packaging. Store at 4–8 °C (39.2–46.4 °F), not below 4 °C (39.2 °F).

CHAPTER 8

Service and contacts

Contact and support

ANALYT-MTC Messtechnik GmbH

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+33 3 89 41 47 78

info@analyt-mtc.fr

www.analyt-mtc.com

Before you call

Have the following at hand so that Analyt-MTC can help you quickly:

- the order code of the filters;
- the lot number and expiry date on the packaging;
- the sampler, the flow rate and the analysis method you use.

Contact Analyt-MTC for filters, technical questions and warranty matters concerning your SKC Gelatin Filters. Warranty is handled under Analyt-MTC's terms of sale. Analyt-MTC's contact details are in this chapter and on the back cover.

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