

## MICROBIO BIOAEROSOL SAMPLING



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Bioaerosols are airborne particles, solid or liquid. They can be large molecules or volatile compounds. They contain living organisms. They will vary in size from a fraction of a micron to around 100 microns. As with inert "dust" particles, all bioaerosols are governed by the laws of gravity and will be affected by air movements being transported by turbulence and diffusion.

## Sources of Bioaerosols

**Outdoor areas:** Wind action on soil, agitation of open water and raindrop impaction are major sources of bioaerosols. Farming of land and wastewater / sewage treatment are also significant outdoor sources. Other farming activities, cattle, swine animal houses will generate bioaerosols. Food processing plants, particularly of dairy products can generate higher levels of bioaerosols. With today's emphasis on renewables, power station biomass storage and industrial scale composting facilities are sources of bioaerosols.

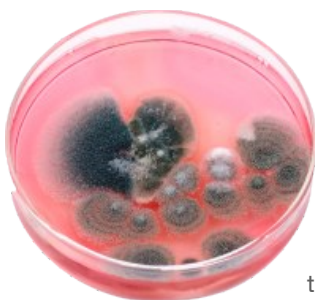


**Indoor areas:** Many indoor areas are associated with bioaerosol problems. In all food processing plants, hygiene requires that levels of airborne micro-organisms are kept as low as possible. Hospitals and healthcare facilities are not only sources of a variety of organisms, but require that patients are not exposed to any of them. The presence of undesirable bioaerosols is often associated with sick building syndrome, being one of a number of factors which contribute to building related illness.



## Monitoring of Bioaerosols

Although the use of simple settle plates can be used for collection of bacteria and fungal spores, it can never give a quantitative determination. This passive technique will also fail to enumerate very small particles such as bacteria, which will remain suspended. The simplest quantitative method of monitoring is to use impact samplers such as the MicroBio MB1 or MB2 units. These are single stage impactors, which collect bacteria and fungal spores from air flowing at 100 litres / minute through a series of air inlets, onto an agar filled 55 mm contact plate or 90 mm Petri dish, up to a volume of 10,000 litres. The MicroBio samplers are lightweight, battery powered self contained units and do not require an external vacuum pump.



The agar media used should be chosen to suit the organisms which are being monitored. For a wide range of bacteria use tryptic soy agar (TSA), casein soy peptone agar (CPSA) and nutrient agar (NA). There are other selective agars for more specific micro-organisms. For fungi (yeasts and moulds) use is made of malt extract agar (MEA) or rose bengal agar (RBA). After sampling with the MicroBio samplers, the agar plates are incubated for specified times and temperatures (typically 1 to 2 days at 25 to 37 deg C) and the colonies which develop are counted. A correction is applied to the count to allow for the possibility that two organisms going through one sampling hole will result in only one colony growth being observed (positive hole correction). This is determined from tables or using the

downloadable spreadsheets from [www.cantiumscientific.com](http://www.cantiumscientific.com). From the corrected count and the sampling volume used, the number of colony forming units per cubic metre (CFU/m<sup>3</sup>) can be determined.

## MICROBIO MB1

The **MicroBio MB1 Bioaerosol Sampler** is the most economical air sampler of its kind. It has been fully validated under the UK DTI VAM programme.

Capable of using both 90 mm Petri dishes or 55 mm contact plates and a wide variety of media makes the MicroBio a very low cost instrument to use.

The **MicroBio MB1** is an invaluable device for validating cleanrooms to ISO 14698 requirements.

### Features

Flow rate 100 litres / minute, factory calibrated

220 hole sampling head d50 = 1.7µm

400 hole sampling head d50 = 1.35µm

Sampling volume 10 to 2,000 litres

Delayed start up to 1 hour

Lightweight (650 g) and portable

Battery powered - rechargeable or alkaline

NiMh (4 x AA) cells and charger supplied

Low battery indication

Low noise

Sample up to 60,000 litres

Uses 90 mm Petri or 55 mm contact plates

### Supplied with the MB1 Bioaerosol Sampler

Petri dish and contact plate spring sets

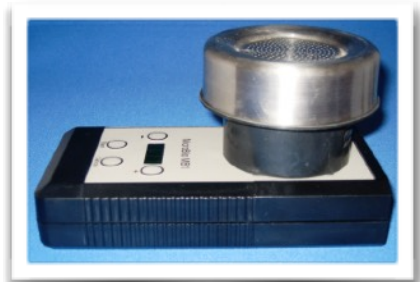
Option of 220 hole x 1 mm stainless steel or 400 x 0.7 mm anodised aluminium sampling head

Printed operating manual

Padded carry case

Multi-voltage Ansmann charger with UK, Euro, USA, Australia and 12V in-car plugs and pre-charged cells so the MB1 is ready to use out of the box

Certificate of Calibration





## MICROBIO MB2 & MB2-HIFLOW



The **MicroBio MB2 Bioaerosol Samplers** have a host of features making them ideal for use in research, clean rooms, pharmaceutical validation and throughout hospitals. Fully validated under the UK DTI VAM programme as a Reference Sampler. The MicroBio MB2, sampling at 100 L/min is capable of using both 90 mm Petri dishes or 55 mm contact plates and a wide variety of media makes the MicroBio a very low cost instrument to use.

The MicroBio MB2-HiFlow, using 90mm petri dishes can sample at a rate of 180 L/min allowing cubic metre samples to be taken in under 6 minutes, greatly reducing the impact of sampling in areas such as hospital operating theatres and sealed cleanrooms.

The **MicroBio MB2** range are invaluable devices for validating cleanrooms to ISO 14698 requirements.

### Features

Flow rate 100L/min (MB2) or 180 L/min (MB2-HiFlow)

d50 = 1.7 $\mu$ m for 220 x 1.0mm hole head (MB2 100 L/min)

d50 = 1.35 $\mu$ m for 400 x 0.7mm hole head (MB2 100 L/min)

d50 = 1.7 $\mu$ m for 400 x 1.0mm hole head (MB2-HiFlow 180 L/min)

Sampling volume 25 to 10,000 litres

9 User programmable pre-set volumes

Programmable delay to start sampling up to 3 hours

UP to 24 hour sequential sampling

Tripod mounting facility

Lightweight (750 g) and portable

Battery powered - rechargeable or alkaline

NiMh (4 x AA) cells and charger supplied

Low noise

Sample over 60,000 litres per charge (MB2)



### Supplied with the MB2 Bioaerosol Sampler

Petri dish and contact plate spring sets

Option of 220 hole x 1 mm stainless steel **or** 400 x 0.7 mm anodised aluminium sampling head for MB2. MB2-HiFlow supplied only with 400 x 1.0mm anodised aluminium head

Printed operating manual

Padded carry case

Optional mini tripod

Multi-voltage Ansmann charger with UK, Euro, USA, Australia and 12V in-car plugs and pre-charged cells so the MB2 is ready to use out of the box

Certificate of Calibration

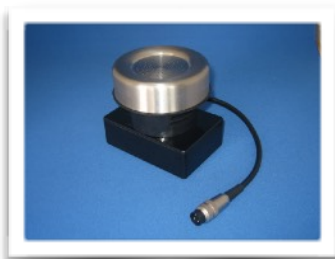




## MICROBIO MB2-RSH

With identical features and performance to the MicroBio MB2, the MicroBio MB2-RSH is ideal for use in sealed compartments, research, clean rooms, pharmaceutical validation and throughout hospitals. The remote sampling head may be placed inside sealed chambers and connecting cables up to 10 metres in length are available.

Capable of using both 90 mm Petri dishes or 55 mm contact plates, readily available at low cost with a variety of media makes the MicroBio a very low cost instrument to use. The MicroBio MB2 RSH is an invaluable device for validating clean rooms to ISO 14698 requirements.





## MICROBIO VALIDATION KIT

To keep your MicroBio Air Sampler at the peak of high performance and to satisfy industry regulators and standards, regular validation is required. The MicroBio Validation Kit enables you to achieve this.

The MicroBio Validation Kit allows users to calibrate their own instruments and allows validation prior to each use for IQ / OQ / PQ compliance.

Supplied in a padded carry case, the kit does not require any power source and is manufactured in such a way that the calibration is fixed for life. This is achieved by high precision engineering and using variable area flow meter tubes from the world's leading manufacturer.



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