Individual sampler of Microbiological Pollutants

CIP 10-M



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The sampling of aero-biocontaminants on rotation liquid for air quality monitoring.

The airborne microbiological pollutants include viruses whose size is lower than the micron to *fungi* spores which can exceed 200 µm. They are naturally maintained in air suspension or can be airborne on aerosol particles.
CIP 10-M allows to carry out air sampling and capture aero-biocontaminants on liquid.
Microbiological quality of air can be evaluated thanks to an analysis of trapping liquid by an enumeration or identification technique .

Applications

Pollutants :
Bacteria (*legionella*, *salmonella*, *listeria*, ...), pollen, virus, *fungi*, endotoxins.
Field of application:
Individual or stationary sampling.
In industry:
Food, sanitation, waste, purification, ...
Collective premises:
Medical, transport, leisure and sport, housing and trading.

Sampling flowrate generation

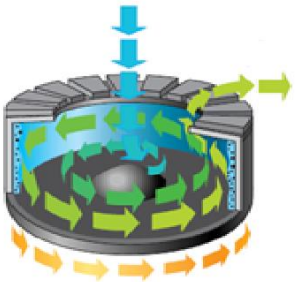
Rotating cup is submitted to a rotation speed of several thousand revolutions per minute. Horizontal blades in the upper part of the cup ensure the flow by an centrifugal fan effect. The air friction on the liquid vertical face and on others internal surfaces of rotating cup generates a depression to channel the air flow towards the collection liquid.

Helical sampling on rotating liquid

The liquid contained in the rotating cup is submitted by friction to the same rotation speed than the cup. The result of aspiration speed and moderate centrifugal force allow a smoothy deposit of bio-aerosols on the fluid surface which is itself plated on the inner wall of the cup. Indeed, the bio-aerosols from sampled air follow a helical path and are deposited under a velocity close to collected fluid.

Liquid hold in the rotating cup

During this rotation, the liquid is submitted to a centrifugal force which plated it on inner vertical circular wall of the cup. At the top of circular wall, an oriented inner flange towards inside of the cup, allows to obtain a cylindrical cavity for holding captive the rotating fluid.



Advantages of helical sampling on a rotating liquid ring

Sample integrity

Unlike traditional sampling methods which generate numerous trauma to biological aerosols, the helical sampling on rotating fluid allows to maintain integrity and the survival of microbial cells.

- No shock undergone by the microbial cells during impact on a filter surface, flask wall or filter surface.
- No trauma generated to bacteria by high speeds or depressions in subsonic nozzles.
- No dehydration of cells during sampling thanks to collecting fluid media.

Collection efficiency

- 100% of particles with aerodynamic diameter >3.5µm and 50% of particles with aerodynamic diamater ≥1.5µm.

Great collection capacity

- The moving collection solution regenerates the sampling surface. It mitigates the risk of surface saturation.

Les spécifications techniques peuvent changer sans avertissement

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Easy handling of samples

- It's possible to transfer, dilute and analyze liquid samples by many ways : counting or identification.

Sampling solution analysis

At the end of sampling, the contained liquid in the cup (around 2 mL) may be analyzed at place (ATP analysis) or collected for further analysis in laboratory with or without dilution.

- Put in culture and colonies counting.
- Put in culture and stem identification.
- Released toxins qualification (for instance, endotoxins inherent to the negative Gram).
- Bacterial cells counting by ear fluorescence.
- PCR identification.

CIP 10-M advantages for airborne micro-organisms sampling

Compatible with numerous collected media

The CIP 10-M allows bio-aerosols sampling witch numerous possible media. The rotating cup is specially developped in order to contain all kinds of fluids. Its annular internal geometry can hold very pure liquids (apyrogenic distilled water, peptone solution, …) as more viscous substances (agar, fat …).

The CIP 10-M is silent

Perfect for sampling in premises welcoming the public (housing, hospitals, sports complexes, transports, collective places …), it is silent and guarantees discretion while delicate survey.

Mobile and compact

The collected solution is kept well by centrifugation in spite of shocks when CIP 10-M is transported. Its ergonomics does not cause discomfort and ensures representative results. It allows to perform individual sampling.

High battery life

No requirement of external power supply.
(The autonomy of collected media depends on its evaporation properties. For a sampling performed with a rotating cup containing water, the autonomy of collected media is about 3 hours depending on air relative humidity).

Compatible materials with sterilization protocols

ABS sampling head and metal cup are autoclavables. Electronic unit to be disinfected.

Sampling possibility of conventional fractions

The CIP 10-M can be equiped with removable sampling heads to sample conventional alveolar, thoracic and inhalable fractions, in accordance to EN 481 standard.



Removable omnidirectional sampling head depending on the conventional fraction to sample.



Helical sampling cup



Electronic unit



Sampling cup view (without selector)

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Description	Lot	Reference
CIP 10-M Kit with 1 electronic unit, rotating cup, inhalable sampling head, battery charger, back fixed carrying pouch, tools and briefcase	1	ARC10010M/
Sampling metal cup for liquid	1	ARC10007_M
Back fixed carrying pouch for CIP 10	1	ARC10004SP
Universal charger for CIP 10	1	ARC10003U
Calibration		
Optic tachometer to control rotation velocity of rotating cup (flow rate measurement of CIP 10-M)	1	ARC8527+
CIP10 flowrate bench in briefcase	1	ARC8525+

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