

Advanced in vitro exposure systems

VITROCELL® AMES 4



VITROCELL®

AMES 4 Exposure Module

For 4 Petri dishes (35 mm size)

The VITROCELL® AMES 4 module system has been specifically designed and engineered to facilitate the research of bacteria direct exposure to airborne substances such as gases, complex mixtures, nanoparticles and fibers.

Normally two modules are required: one module for exposure to the substances and a second module for clean air control. The capacity can be easily increased by adding more modules. Each module can receive a different dose

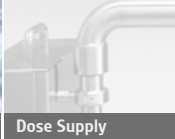
concentration, so that a complete dose/response profile can be obtained in one experiment. The bacteria are directly exposed using controlled flow rates of the aerosol.

After exposure, the cultures are further processed to measure the number of revertants.





Exposure Systems



Dose Supply



Dilution



Racks & Carts



Dose Monitoring



Skin Exposure



Auxiliary Equipment

Base module

This high-quality modules' casing is made of electropolished stainless steel. It has been designed with four compartments for 35 mm Petri dishes.



This module is renowned in scientific circles for its reliability and durability.

35 mm Petri dishes



Aerosol exposure top



Special sealing and connection mechanisms guarantee a hermetic connection of the base module with the aerosol exposure top.

The inlets are available in stainless steel or stainless

steel with unique VITROGLIDE surface treatment for lowest adhesion results. The aerosol inlets are connected to the aerosol generation / dilution system and their respective outlets to the vacuum pump.

Features

- Suitable for Petri dishes (diameter 35 mm)
- Hyperboloid geometry of inlets for optimized particle deposition and distribution
- Direct flow control for each inlet
- Base module made of stainless steel for maximum durability
- Option: Quartz Crystal Microbalance

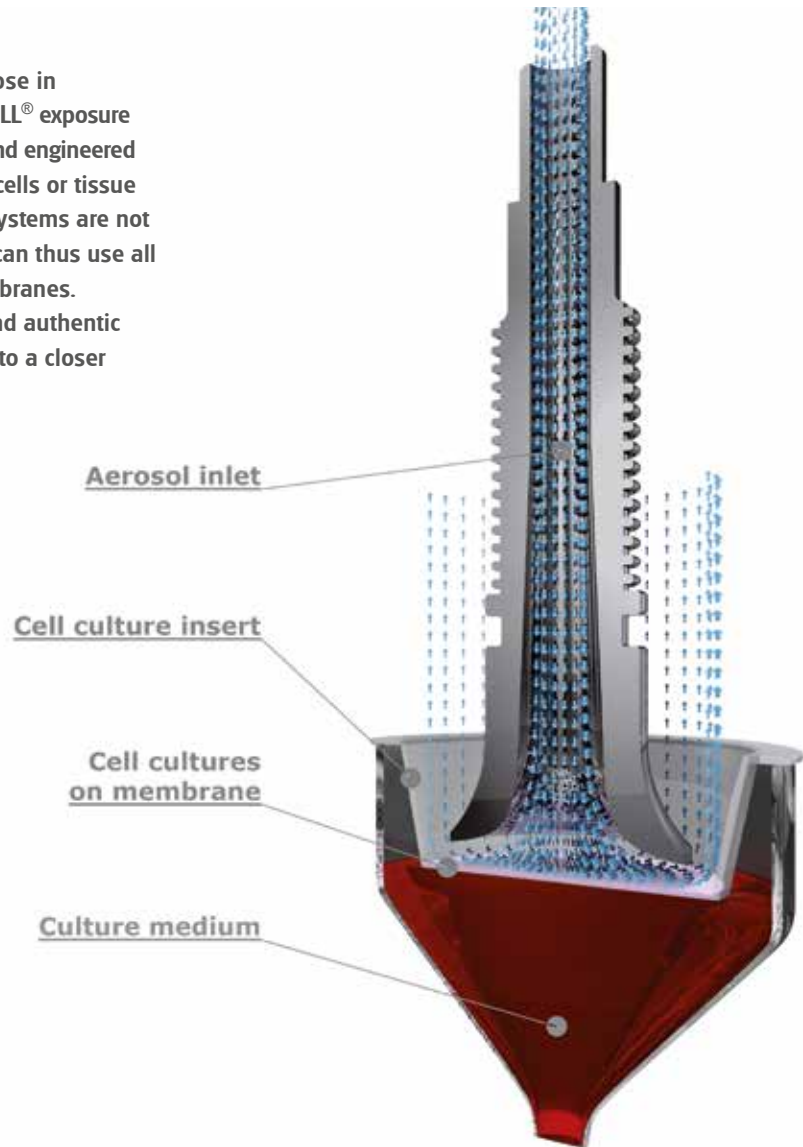


Optional microbalance sensor for dose monitoring

VITROCELL[®] Exposure Systems for Inhalation Toxicology

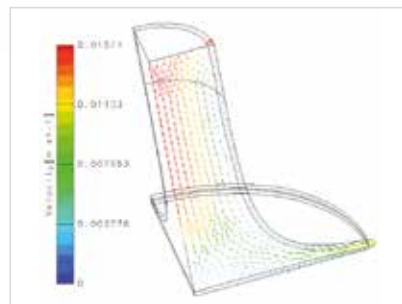
Direct Exposure Technology at Air/Liquid Interface

In response to the scientific need to expose in physiologically relevant conditions, VITROCELL[®] exposure modules have been specifically designed and engineered to enable direct exposure of mammalian cells or tissue at the air/liquid interface where the cell systems are not covered with culture media. Researchers can thus use all cell types cultivated on microporous membranes. This approach allows for more credible and authentic results than by submerged exposure due to a closer replication of the human physiology.



The advantages:

- No losses
- No dissolution
- No reaction of constituents with culture media
- High sensitivity



Optimized
flow dynamics



VITROCELL® EXPOSURE AT THE AIR/LIQUID INTERFACE

Submerged Cultivation and Exposure in Incubator

- A** Media above cells
- B** Cells on membrane
- C** Media below cells

Interaction of test components with culture media

Low sensitivity

Suspension Cultivation and Exposure in Incubator

- A** Cells in media

Interaction of test components with culture media

Low sensitivity

Air / Liquid Cultivation and Exposure in Exposure Module

- A** Direct and controlled exposure of test atmosphere to cells
- B** Cells on membrane
- C** Media below cells

No losses
No reaction of principle components with culture media

High sensitivity of system

The exposure of mammalian cells or tissues to airborne substances is frequently performed under submerged conditions. In doing so, the test substances are dosed into the culture media. This procedure results in an undesired interaction of the formerly airborne substances with the media, causing limitations for authentic analysis.

Therefore VITROCELL® recommends the air/liquid interface exposure technology.



About VITROCELL®

VITROCELL® exclusively concentrates on the developing, producing, installing, training and servicing of advanced *in vitro* exposure systems.

The VITROCELL® Systems' team is driven by their vision for new in-vitro standards through state-of-the-art technology, highly qualified workmanship and absolute client dedication. VITROCELL® has successfully collaborated with clients from leading research institutes, contract research organizations, regulatory authorities or industrial laboratories across the world. Working with our team experts, all modules have been tailored to create durable and complete turnkey-systems for *in vitro* inhalation toxicology. Gases, environmental atmospheres, nano particles and complex mixtures are analyzed on lung cells at the air/liquid interface using these systems. VITROCELL® technologies are also applicable to solutions for skin research.

Over a decade of devotion to research in this specific field has given our team of design & precision manufacturing specialists the opportunity to mentor highly diversified and complex projects **from conception to completion**. We strive to become a constructive member of each research team, providing support when it is needed, advice when it is required and modules of the highest quality, which are even polished by hand before leaving here to be integrated into your workspace. Every piece of our German engineered equipment is manufactured to the highest of standards – yours.

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