

Advanced in vitro exposure systems



APPLICATION NOTE

AN-13

December 2024

VITROCELL® Cloud Systems

Single Droplet Sedimentation

Single Droplet Sedimentation Systems are specifically designed for dose-controlled and spatially uniform deposition of liquid aerosols on cells. Test substances are chemicals or particles brought into suspension with e.g. PBS.

The aerosol is applied for a short time of approx. 7 – 10 minutes.

This method is well suited for scarce and expensive materials, such as new drug candidates or particle samples from the environment.

Nebulization volumes range from 15 – 300 µl (Cloud Alpha Move 500 µl). Aerosolization is performed directly into the cell culture exposure chamber. Aerosolization can be repeated several times to obtain a dose-response profile.

VITROCELL® Nebulizer Overview

	Aerogen LAB		Aerogen PRO	Aerogen SOLO	Advanced Nebulizer	
Droplet Size	2.5 – 4.0 µm	4.0 – 6.0 µm	2.5 – 6.0 µm	2.5 – 6.0 µm	4 µm 9 – 12 µm	17 µm 20 µm
Products	<div>Label LOW VMD</div> 	<div>Label STD VMD</div> 	<div>Imprint AEROGEN PRO</div> 		<div>SN / M4/ M12</div> 	<div>SN / M17/ M20</div> 
Information	—	—	Discontinued November 2024	—	M4 has a blue plastic ring at the bottom	For dispersing larger droplets M17 and M20 are offered with a passive diffuser.
Autoclavability	Yes	Yes	Yes	No	No	No
Suitable Solvents	1% Saline solution 1 x PBS 70% Ethanol 20% DMSO	1% Saline solution 1 x PBS 70% Ethanol 20% DMSO	1% Saline solution 1 x PBS 70% Ethanol 20% DMSO	1% Saline solution 1x PBS 70% Isopropyl alcohol	1% Saline solution 1 x PBS 100% Ethanol 100% DMSO	1% Saline solution 1 x PBS 100% Ethanol 100% DMSO
Nebulization time for 200 µl PBS	ca. 80-90 s	ca. 40-55 s	ca. 35-50 s	ca. 25-35 s	100% ca. 7 s 50% ca. 15 s 25% ca. 30 s	100% ca. 4 s 50% ca. 8 s 25% ca. 16 s



Cloud with Aerogen LAB Nebulizer



Cloud with Aerogen SOLO Nebulizer



Cloud with Advanced Nebulizer and passive diffuser

VITROCELL® Cloud Diffuser

The patented diffuser ensures a uniform distribution of larger droplets, ranging from 17 to 20 μm , within the Cloud Exposure Chamber.

To prevent any issues caused by larger droplet formation, the system is equipped with an integrated drainage channel.



Diffuser (only required for 17 and 20 μm droplets)



Nebulizer Controller



Flow Controller (only required for older Cloud systems)

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.

For more information please scan the QR-Code:



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