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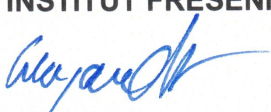
Testing of the antiviral effectivity of the air cleaner **Arpack AirClean AC 100**


Dear Mr. Niemczyk,

please find next our report on the testing of the antimicrobial effectivity of the air cleaner „**Arpack AirClean AC 100**“.

This report consists of 5 pages including first page. In case of questions please ask.

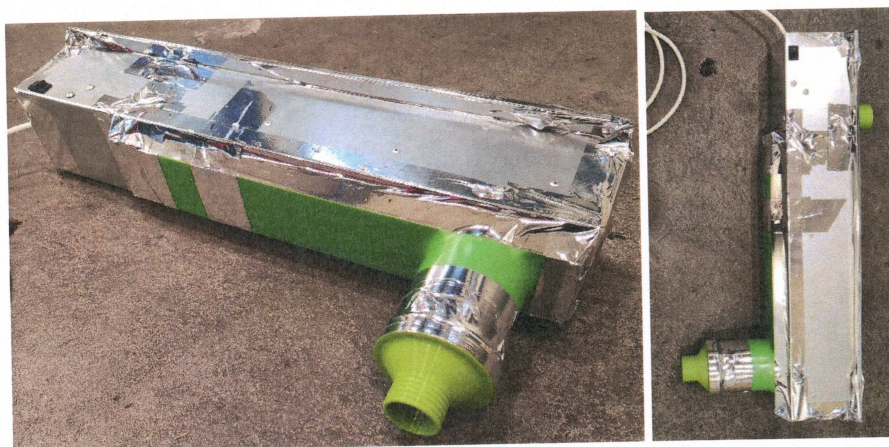
Yours sincerely
SGS INSTITUT FRESENIUS GmbH


i.V. Dr. Ralph G. Weyandt
(Innovation-/Project Manager)


for i.A. Anna-Magdalena Eigenbrodt
(Project Manager)

Test Report

Testing of the antiviral effectivity of the air cleaner *Arpack AirClean AC 100*



Summary of test results

Simulated flush contaminations showed an elimination resp. reduction of enveloped viruses as follow:

Virus: >4 Log-level (= Reduction of 99,99%)

Aim of Investigation

Detection of the elimination rate of flush-contaminated enveloped viruses passing the air cleaning unit.

Product Description

Device designation: **Arpack AirClean AC 100**

Based on the information given by the sponsor, the device encloses an open-pored glass tube filled with glass beads with a diameter of 0,8-1,0mm. Length of the tube is 420mm, diameter is 82mm, and the wall thickness is 6mm. The tube is originally coated with a liquid water-based suspension out of photocatalytic active nanocrystalline powder of titanium dioxide. (ca. 10,2 grams). Inside the device a UV-A lamp is placed. A light metal casing protects the functional units. The device is equipped with a fan.

Materials & Methods

Experimental Setup / Flush Contamination

The device has been sealed up carefully before testing.

Before starting the tests, the device was actuated for 60 minutes (without any additional aspiration). After this pre-conditioning phase the device was connected to a suction unit with a volumetric flow rate of 17 Nm³/h. The dosage of defined target species quantities occurred by atomizing a liquid suspension.

The total air volume of a three-minutes-run was passed through an impingement. 3 single measurements have been performed with UV-A radiation (Sample T1-3), and 3 further runs without UV-A radiation (Sample T4-6).

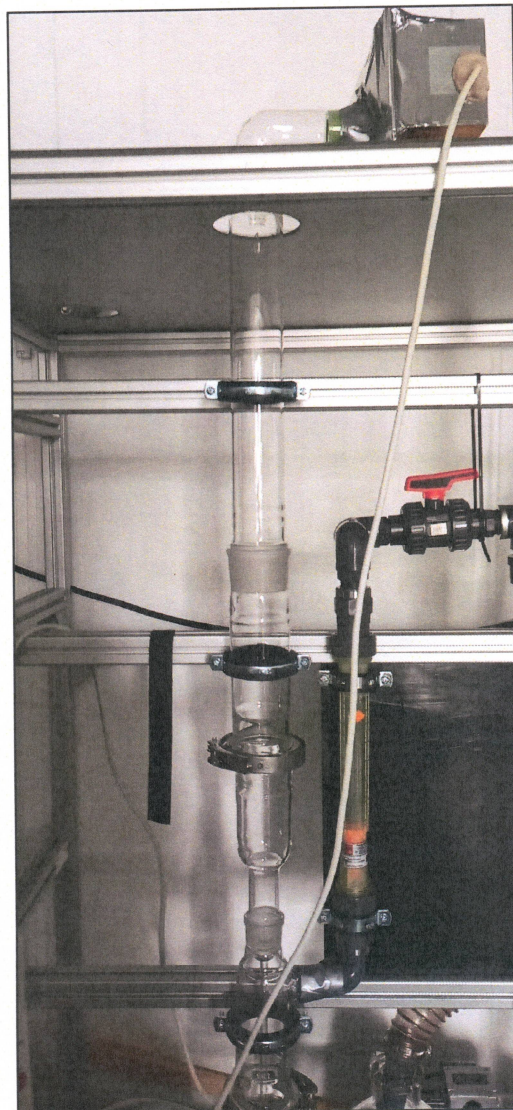


Fig. 1.: Test Setup, partial view

Target-Species

Enveloped Viruses

- Vacciniavirus, strain Ankara (MVA), ATCC VR-1508

Host:

- immortalised BHK-21-Cells (baby hamster kidney)

Quantification method:

- Linear dilution series
- mikroskopische detection

Application of viruses under sterile conditions:

- each run: 0.5ml virus-suspension

Parallels:

- each test adaptation. 3 parallels

Results

Tab. 1: Overview on results, target species Vaccinia

	Ig TCID ₅₀ /ml	log Reduction	%-Reduction
Sample T1	<0.50 ± 0.00	4.23	>99.994
Sample T2	<0.50 ± 0.00	4.23	>99.994
Sample T3	0.67 ± 0.33	4.06	99.991
T₁₋₃ (Mean Value)	<0.56 ± 0.19	4.22	>99.993
Sample T4	0.67 ± 0.33	4.06	99.991
Sample T5	<0.50 ± 0.00	4.23	99.994
Sample T6	1.00 ± 0.45	3.73	99.810
T₄₋₆ (Mean Value)	<0.72 ± 0.32	4.01	>99.990
Control K (absolute applied virus concentration)	7,33 ± 0,54	Reference value	Reference value

*TCID₅₀ = 50% tissue culture infective dose.

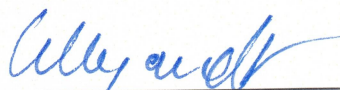
Based on the generated mean values, the log-reduction rate of applied infectious viruses in comparison to the initial virus concentration is >4.0 under the conditions of this testing.

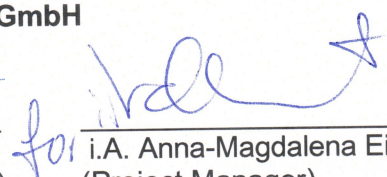
Remarks

The detection of filter breakthrough, efficiency under non-stop operation, aging effects, and detection of single contribution of modules to the overall elimination rate are not subject of investigation.

Yours sincerely

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- End of test report -

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