

# LABOR ENDERS

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## Expert opinion

### Virucidal activity of plasma disinfection in a PlasmaEgg® device

In February, March, May, and July 2023, tests on the activity of plasma disinfection using a PlasmaEgg® device were performed at the accredited test laboratory Labor Prof. Dr. G. Enders MVZ GbR (accreditation certificates according to DIN EN ISO/IEC 17025 and DIN EN ISO 15189). According to requirements defined in DIN EN 16777, tests were carried out with several virus strains in order to claim virucidal activity of cold plasma generated by PlasmaEgg® (test reports LI-V-023-018, LI-V-023-024, LI-V-023-025 and LI-V-023-026).

The following test viruses have been used in a modified DIN EN 16777 test protocol for the following European claims:

- virucidal activity PLUS: Minute virus of mice, strain Crawford (MVM)
- Limited spectrum of virucidal activity: Murine norovirus, strain S99 (MNV) and Adenovirus type 5, strain Adenoid 75
- Activity against enveloped viruses: Modified vaccinia virus Ankara

Different carrier materials (textile and plastic) have been analyzed without any addition of interfering substances to the test setup. Holding times of the plasma disinfection process were 20, 60, and 90 minutes.

Activity on porous surfaces (textile) can be confirmed for MVM, as shown in table 1.

Tab.1: Activity on porous surfaces (textile)

Test strain	Holding time	Reached reduction
Minute virus of mice, strain Crawford (virucidal activity PLUS)	20	4.67 log
Minute virus of mice, strain Crawford (virucidal activity PLUS)	60	4.39 log

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Activity on nonporous surfaces (plastic) can be confirmed for strains shown in table 2.

Tab.2: Activity on nonporous surfaces (plastic)

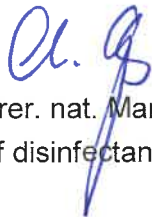
Test strain	Holding time	Reached reduction
<b>Minute virus of mice, strain Crawford (virucidal activity PLUS)</b>	90	4.11 log <sub>10</sub> TCID <sub>50</sub> /ml
<b>Murine norovirus, strain S99 (limited spectrum of virucidal activity)</b>	60	≥ 3.17 log <sub>10</sub> TCID <sub>50</sub> /ml no residual virus*
<b>Adenovirus type 5, strain Adenoid 75 (limited spectrum of virucidal activity)</b>	20	≥ 1.50 log <sub>10</sub> TCID <sub>50</sub> /ml no residual virus*
<b>Modified vaccinia virus Ankara (activity against enveloped viruses)</b>	60	≥ 3.67 log <sub>10</sub> TCID <sub>50</sub> /ml no residual virus*

\* Due to the drying loss of the virus control, no sufficient reduction of 4 lg could be demonstrated

### Summary

Full virucidal activity of cold plasma generated by PlasmaEgg® can be achieved on porous surfaces (textile) already after 20 min of contact time, on nonporous surfaces (plastic) after 90 min.

When analyzing for limited virucidal activity or activity against enveloped viruses, no residual virus could be found on nonporous surfaces (plastic) after 60 min at the latest.



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