

# PD Dr. rer. nat. Dr. med. habil. Friedrich von Rheinbaben

Virologie, Mikrobiologie, Hygiene

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To  
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## **EXPERT OPINION**

**on the virucidal effectiveness of the processing procedure of  
undercounter hood type and universal dishwashers (single-tank machines) from Meiko  
against enveloped viruses,  
especially against the new Coronavirus (SARS-CoV-2)**

### **Introduction**

Single-tank dishwashers without automatic washware transport for dishes, glasses and other washware (undercounter hood type and universal dishwashers, single-tank machines) for the processing of dishes have to process crockery properly. To do this, they have to bring dishes into that highly clean condition which can be experienced by the consumer. In addition, however, they must also treat these items in such a way that they cannot pose any risks of infections because dishes can be contaminated with a large number of problematic germs during their previous use.

The technology includes machines that can differ considerably in their technical detail. All these devices, however, have in common that the wash ware is not automatically transported through the machines (stationary wash process). To protect consumers against the transmission of pathogens through poorly processed crockery, the processing conditions, prevailing on the wash ware itself, and some other special technological details are decisive.

Above all, these are:

- The mechanics, i.e. the standardised supply of water and cleaning solution during cleaning and rinsing
- the correct dosage of all chemical components - detergent as well as rinse aids
- a dosing system that not only ensures the exact application concentrations of the products, but also the standardised preparation of the application solution and their availability on the wash ware, especially during a short contact time
- the exact temperature control on the wash ware
- the constant and safe maintenance of the required minimum temperature on the items to be washed during the single processing phases

### **Cleaning and disinfection process**

For undercounter hood type and universal dishwashers from MEIKO, these requirements are met, among others, by the special nozzle technology and the application system of water with detergents or rinse aids in the washing arms of the machines. In addition the special double-walled thermal insulation of the washing chambers helps to maintain the required temperature level.

Single-tank dishwashers without automatic washware transport from Meiko have one reprocessing cycle in common, which adheres to the following minimum parameters:

- Cleaning with the cleaners, recommended by Meiko at pH 11.5 to pH 13 and a surface temperature of at least 60°C on the wash ware
- Rinse aid with a rinse aid recommended by MEIKO on the dishes with a surface temperature of 60°C to 70°C (which requires a water temperature at the nozzle outlet of at least 65°C for glass dishwashers and up to 82°C for dishwashers and universal dishwashers)
- The total duration of the process is at least 90 seconds and is specified by the respective program.

### **Undercounter hood and universal dishwashers from MEIKO**

With correct setting and maintenance, these conditions for inactivating corona viruses are met by the following Meiko machines:

*MEIKO Undercounter Dishwashers at all Operation Speed Settings:*

MEIKO Upster U400

MEIKO Upster U500

*MEIKO Pan Dishwasher at all Operation Speed Settings:*

MEIKO Upster PF600

*MEIKO Hood Type Dishwashers at Operation Speed Setting I:*

MEIKO Upster H500

MEIKO Upster H1000

## **Products to use in the processing procedure**

The products used in the preparation cycle must meet the following minimum requirements:

### Cleanser:

- Highly alkaline, based on potassium hydroxide, disodium metasilicate and sodium hydroxide
- Concentration of at least 2.5g/l of the liquid cleaner or at least 1.8 g/l of a solid cleaner
- pH 11.5 to pH 13 in the application solution
- Temperature and contact time are program controlled

### Rinse aid:

- Concentration of at least 0.1g/l of a non foaming compound (e. g. Alcoholalkoxylate)
- pH 5 to pH 7 in the application solution
- The temperature and contact time are program controlled

## **Virucidal activity against enveloped viruses**

Corona viruses belong to the group of enveloped viruses. They usually cause mild respiratory and intestinal infections in humans. The newly emerging strain is an exception in this point because it can also cause a life-threatening respiratory infection. In terms of its dangerousness, it roughly corresponds to the classic flu caused by the Influenza A virus.

As an enveloped virus, however, the new pathogen is no more resistant to disinfectants and processes or heat exposure than all other enveloped viruses. Nor is there any special thermal resistance for it, as is known for all corona viruses.

On the contrary, it can be assumed that corona viruses exposed to temperatures of 60°C to 70°C are already sensitive. The high effectiveness of alkaline cleaners against enveloped viruses has been proven in numerous studies. This applies particularly to cleaners with a high fat-solving capacity and to cleaning solutions in the temperature range of 50°C and higher.

Undercounter hood type and universal dishwashers from MEIKO therefore fulfil the prerequisites for inactivating Corona viruses as well as all other enveloped viruses, provided that they are used as intended and function perfectly, as well as maintenance and repair according to the manufacturer's specifications.

## Conclusion

Due to the known properties of Corona viruses and other enveloped viruses, if the Undercounter hood and universal dishwashers from Meiko are used as intended and the detergents and rinse aids recommended by MEIKO are taken, a virucidal activity against enveloped viruses can be assumed if the following minimum parameters are observed:

- Use undercounter hood type and universal dishwashers maintained according to the manufacturer's specifications
- Proper pre-clearing in accordance with Meiko's recommendations
- Use of the specified washing program with a total washing time of at least 90 seconds
- Maintaining a cleaning temperature of at least 60°C on the wash ware
- Maintaining a temperature of at least 60°C to 70°C in the rinse cycle on the wash ware
- Use of the alkaline detergents and rinse aids recommended by MEIKO



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