Cleaning efficacy of DEKO 190 on Clostridioides difficile

This white paper presents the **cleaning efficacy of the DEKO 190 bedpan washer disinfector**, manufactured **by DEKO MedTech, against Clostridioides difficile (C. diff) spores**. The DEKO 190's unique washing technique, based on freshwater circulation, ensures optimal cleaning and disinfection. This white paper incorporates both historical data and recent findings from a 2025 study.

Introduction

Clostridium difficile (C. difficile) is a significant nosocomial pathogen that can cause a range of diseases from mild diarrhea to severe pseudomembranous colitis and toxic megacolon. **The incidence and severity of C. difficile infections (CDI) have increased since the early 2000s due to the emergence of new strains and enhanced surveillance**. CDI results in the shedding of spores that can survive for long periods in the environment and are resistant to many disinfectants, making them a frequent and persistent contaminant in hospital settings.

Bedpans are commonly used for hospital inpatients, including those with CDI. Manual cleaning of bedpans poses a high-risk of infection to healthcare employees and patients and should be avoided. Washer disinfectors are employed to clean and decontaminate soiled bedpans and other reusable items in healthcare facilities. Evaluating the ability of bedpan washer-disinfectors to remove C. difficile spores from bedpans is crucial to prevent transmission within healthcare environments.

Overview of DEKO 190

The DEKO 190 is intended for emptying, washing, rinsing and thermal disinfection of human-waste containers such as bedpans, urine bottles, kidney bowls and suction bottles. Its **unique washing technique**, based on freshwater circulation during the detergent wash and post-wash rinse phases, ensures superior cleaning efficacy.

The corner stones of DEKO 190's washing efficacy:

- **Optimal Temperature:** Fully adjustable program parameters.
- **Powerful Mechanical Scrubbing Effect:** High-power 600l/min pump and 10 water jets tackle the toughest soil.
- **Chemical Action:** Economic dosing owing to an exceptional washing method.
- **Sufficient Time Based on Wash Items:** Four factory-set and tested programs in accordance with 15883-3 and a fully adjustable, unlimited program library for cleaning and disinfecting the most challenging loads.
- **Uncompromising thermal disinfection:** Thermal disinfection with a default A0 value of 600 (≥+90°C / 60sec), which can be adjusted to reach up to A0 = 13 000 by modifying the disinfection time and temperature

Proven efficacy

Multiple studies have confirmed the DEKO 190's cleaning efficacy. Most recently, **HygCen Germany GmbH study in 2025** demonstrated the DEKO 190's effectiveness in removing and killing Clostridioides Difficile (C. difficile) spores from contamined bedpans.

- The results **showed a reduction of more than ≥ 5 log10 against C. difficile across all test specimens**, demonstrating sufficient disinfection efficacy. The study was based on the following test methods: EN 17126:2019 standards for sporicidal activity and DIN EN ISO 15883-3:2009 and 15883-5:2021 requirements for washer-disinfectors and test soils.
- The washing and disinfection cycle "Intensive" used in the study:

1	Flush, cold water	~ 5 sec
2	Flush, Warm Water	~ 5 sec
3	Circulation Wash with Detergent	5 min
4	Circulation Rinse, Hot Water	15 sec
5	Disinfection	90°C for 1min

- Test specimens were contaminated with C. difficile spores and subjected to the complete washing cycle, using neodisher SBR extra. The reduction of C. difficile was measured to determine the disinfection efficacy. **The DEKO 190 achieved the full removal of C. difficile consistently in all test cycles with no remaining colony forming units detectable.**

Previous studies:

- Collins and Riley (ASM 2018): The study evaluated the DEKO 190's ability to remove C. difficile spores from contaminated plastic bedpan surfaces. The findings indicated that the DEKO 190 significantly reduced spore concentrations, with the most effective reduction observed during long and intensive wash cycles using an alkaline detergent.
- MacDonald et al. (2016): Published in the American Journal of Infection Control, this study assessed the DEKO 190's efficacy in eliminating C. difficile spores from bedpans in a clinical setting. The results demonstrated that the DEKO 190 achieved a >5.9 log10 reduction in spore counts for 96% of the bedpans tested. Two bedpans had 1 to 2 spores remaining, and viable spores were isolated from all cryovials, indicating that temperature alone was insufficient to kill the spores. The study emphasized the importance of proper maintenance, staff training, and adherence to operational specifications to ensure effective spore elimination.

Practices for Improved Infection Prevention

Efficient infection prevention processes reduce the risk of infections among healthcare professionals and patients. With these infection prevention strategies, healthcare facilities can significantly reduce the risk of healthcare-associated infections (HAIs) and ensure a safer environment for patients and staff.

1. Automated Bedpan Reprocessing: Utilize automated bedpan washer-disinfectors, such as the DEKO 190, which offer advanced washing techniques, including freshwater circulation, optimal temperature control, powerful mechanical scrubbing, and economic chemical dosing. These features ensure thorough cleaning and disinfection of bedpans and urine bottles as well as other human-waste containers, including kidney dishes, shoes, and suction bottles, minimizing the risk of infection.
2. Minimizing Manual Handling: Reduce manual handling of contaminated items to lower the risk of infection. Utilizing an automated bedpan washer-disinfector that allows direct emptying of wash items into the machine minimizes the risk of aerosolized contaminants, reducing healthcare workers' exposure to hazardous waste, and significantly decreases the potential for cross-contamination.
3. Efficient Washing Cycle: Implement a powerful cleaning and disinfection cycle with proven cleaning efficacy and an A0 value of 600 (≥+90°C / 60sec).
4. Personal Protection: Ensure healthcare workers wear appropriate personal protective equipment (PPE), such as gloves, gowns, and masks, when handling contaminated items or caring for patients with infectious diseases. This helps prevent the transmission of pathogens.
5. Environmental Cleaning: Conduct regular cleaning and disinfection of surfaces in healthcare settings to prevent the spread of infections. High-touch areas, such as doorknobs, bed rails, and medical equipment, should be cleaned frequently.

Uncompromised Design

The latest washing efficacy study substantiates the DEKO 190's exceptional washing principle, based on freshwater recirculation, which has been setting the benchmark for the industry for decades. The DEKO 190's design ensures unparalleled safety and reliability through its intuitive user interface, robust process controls, and comprehensive safety devices. It adheres to stringent standards, including EU MDR and ISO 15883-1 and 15883-3, ensuring compliance and performance.

This design consistency has been meticulously audited under EU MDR 2017/745 by Notified Body 0537 Eurofins Electric and Electronics Finland Oy. Consequently, the findings from previous studies remain applicable to the latest machine versions: DEKO 190 GT, DEKO 190 iX, and DEKO 190 X2, affirming the DEKO 190's superior washing efficacy and reliability.

Company History

DEKO MedTech, a Finnish medical device manufacturer, has a rich history of innovation and excellence in the field of medical technology. The company was formerly known as Franke Finland and Franke Medical. Throughout its evolution, DEKO MedTech has remained committed to providing high-quality, reliable, and effective solutions for healthcare facilities. The DEKO 190 bedpan washer disinfector is a testament to this commitment, offering superior cleaning efficacy and advanced features that meet the stringent standards of the medical device industry.

Authors

Sini Ahlfors, Export Manager, DEKO MedTech
Ann-Marie Asikainen, Business Development Manager, DEKO MedTech

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