

DDV - STEAM DISINFECTION DEVICE COMPLIES WITH AFNOR NF T72-110 STANDARD*

The tests confirm the **effectiveness of Polti Sani System's superheated dry saturated steam** for steam disinfection.

THE TESTS AND RESULTS ON EFFECTIVENESS ARE SHOWN BELOW

1

Disinfection effectiveness

Third party and independent laboratories

The products of the Polti Sani System family are SDD - Steam Disinfection Devices.

*The products of the Polti Sani System range have been tested in compliance with the standard AFNOR NF T72-110 - medical setting and have demonstrated virucidal, bactericidal, sporicidal, fungicidal, levurocidal and mouldicidal effects.

LIST OF TESTS:

- 09/02/2021 - **Bovine Coronavirus (BcoV)** - surrogate virus for SARS-related viruses (including SARS CoV-2) - STANDARD AFNOR NF T 72-110:2019 - Laboratorio Eurofins Biolab - Vimodrone (MI) - Italia
- 04/02/2021 - **Escherichia coli** - Determination of bactericidal, fungicidal, yeasticidal and sporicidal with POLTI SANI SYSTEM - STANDARD AFNOR NF T72 110: 2019 03 - EcamRicert Srl - a Mérieux NutriSciences Company - Monte di Malo (VI)
- 04/02/2021 - **Pseudomonas aeruginosa** - Determination of bactericidal, fungicidal, yeasticidal and sporicidal with POLTI SANI SYSTEM - STANDARD AFNOR NF T72 110: 2019 03 - EcamRicert Srl - a Mérieux NutriSciences Company - Monte di Malo (VI)
- 04/02/2021 - **Bacillus subtilis spores** - Determination of bactericidal, fungicidal, yeasticidal and sporicidal with POLTI SANI SYSTEM - STANDARD AFNOR NF T72 110: 2019 03 - EcamRicert Srl - a Mérieux NutriSciences Company - Monte di Malo (VI)
- 04/02/2021 - **Candida albicans** - Determination of bactericidal, fungicidal, yeasticidal and sporicidal with POLTI SANI SYSTEM - STANDARD AFNOR NF T72 110: 2019 03 - EcamRicert Srl - a Mérieux NutriSciences Company - Monte di Malo (VI)
- 04/02/2021 - **Aspergillus brasiliensis** - Determination of bactericidal, fungicidal, yeasticidal and sporicidal with POLTI SANI SYSTEM - STANDARD AFNOR NF T72 110: 2019 03 - EcamRicert Srl - a Mérieux NutriSciences Company - Monte di Malo (VI)
- 14/07/2020 - **Enterococcus hirae** - Report for POLTI SANI SYSTEM BUSINESS - POLTI SANI SYSTEM GUN test - STANDARD AFNOR NF T72 110: 2019 03 - EcamRicert Srl - a Mérieux NutriSciences Company - Monte di Malo (VI)
- 10/02/2011 - **Staphylococcus aureus** - Verification of the bactericidal efficacy of the POLTI SANI SYSTEM in combination with the HP MED sanitiser - Prometeo Laboratory - Bologna - Italy
- 10/02/2011 - **Acinetobacter baumannii** - Verification of the bactericidal efficacy of the POLTI SANI SYSTEM in combination with the HP MED sanitiser - Prometeo Laboratory - Bologna - Italy
- 10/02/2011 - **Pseudomonas aeruginosa** - Verification of the bactericidal efficacy of the POLTI SANI SYSTEM in combination with the HP MED sanitiser - Prometeo Laboratory - Bologna - Italy
- 10/02/2011 - **Klebsiella pneumoniae** - Verifica dell'efficacia battericida del Sistema POLTI SANI SYSTEM in combinazione con il sanificante HP MED - Laboratorio Prometeo - Bologna - Italia
- 29/06/2010 - **Total microbial load** - Polti Sani System test in a real context on ambulances - San Severo Hospital - ASL Foggia - Italy
- 04/12/2009 - **Human Influenza A virus (H1N1)** - Report 2009/958 SAMi - Evaluation of the virucidal efficacy (H1N1) of superheated dry steam and HP MED - Eurofins Biolab Laboratory - Vimodrone (MI) - Italy
- 14/01/2009 - **Staphylococcus aureus** - University of Technology di Swinburne - Australia
- 14/01/2009 - **Saccharomyces cerevisiae** - University of Technology di Swinburne - Australia
- 14/01/2009 - **Pseudomonas fluorescens** - University of Technology di Swinburne - Australia
- 14/01/2009 - **Escherichia coli** - University of Technology di Swinburne - Australia
- 14/01/2009 - **Enterococcus faecalis** - University of Technology di Swinburne - Australia
- 14/01/2009 - **Aspergillus Niger** - University of Technology di Swinburne - Australia
- 02/05/2008 - **Staphylococcus aureus meticillino-R (MRSA)** - Evaluation of the bactericidal activity of superheated dry steam and HP MED against methicillin resistant Staphylococcus aureus (MRSA) - Cantonal Institute of Microbiology - Bellinzona - Switzerland
- 22/02/2008 - **Escherichia coli** - Evaluation of the bactericidal activity of superheated dry steam and HP MED - Cantonal Institute of Microbiology - Bellinzona - Switzerland

22/02/2008 - **Coagulase-Negative Staphylococcus** - Evaluation of the bactericidal activity of superheated dry steam and HP MED - Cantonal Institute of Microbiology - Bellinzona - Switzerland

22/02/2008 - **Klebsiella pneumoniae** - Evaluation of the bactericidal activity of superheated dry steam and HP MED - Cantonal Institute of Microbiology - Bellinzona - Switzerland

22/02/2008 - **Proteus mirabilis** - Evaluation of the bactericidal activity of superheated dry steam and HP MED - Cantonal Institute of Microbiology - Bellinzona - Switzerland

16/07/2007 - **Staphylococcus aureus meticillino-R (MRSA)** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Staphylococcus aureus meticillino-S (MSSA)** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Streptococcus sanguinis** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Streptococcus agalactiae** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Streptococcus pneumoniae** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Streptococcus pyogenes** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Nocardia asteroides** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Nocardia farcinica** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Enterococcus faecalis** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Enterococcus faecium** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Campylobacter Spp** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Escherichia coli** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Klebsiella oxytoca** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Serratia marcescens** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Proteus mirabilis** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Salmonella enterica** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Pseudomonas aeruginosa** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Stenotrophomonas maltophilia** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

16/07/2007 - **Haemophilus influenzae** - Evaluation of the antimicrobial activity of a system of saturated steam nebulization - A.O. "San Carlo Borromeo Hospital" - Milan - Italy

2

Evaluation of the virucidal disinfectant efficacy of superheated dry steam against SARS-CoV-2

Laboratory Eurofins Biolab - Vimodrone (MI) - Italy

The virucidal efficacy was assessed according to the **French regulation AFNOR NF T 72-110: 2019** (Method of disinfection of surfaces by steam with or without contact - Determination of bactericidal, fungicidal, levurocidal, sporicidal and virucidal activity).

On the basis of the results obtained, in the experimental condition adopted, the product under examination causes a reduction greater than or equal to 4.39 Log (99.99%) against Bovine Coronavirus* (BCoV) RVB-0020 with 1 application of continuous steam with a pass at a speed of 10 cm/sec and at a distance of 5 mm from the surface.

Considering that:

- The SARS-CoV2 virus - according to published information - has heat-sensitive properties similar to other Coronaviruses;
- Thermosensitive viruses are completely deactivated in a few seconds at very high temperatures, for example from 150° to 160°C due to the heat and the deactivation speed for each log is minimal, quantifiable as about 0.1 second;
- Coronaviruses are completely deactivated within one minute at 80°C from the heat generated by dry steam and the log deactivation speed is approximately 10 seconds;
- The viral load of Coronavirus can be partially reduced within one minute at 65°C from the heat generated by dry steam;

It can be said that the steam treatment of Polti equipment must be considered effective in completely deactivating the SARS-CoV2 virus at a temperature of 80°C or higher. With the very high temperatures reached by Polti Sani System, deactivation is effective in very short exposure times (a few seconds).

* Bovine coronavirus is used as a surrogate virus for SARS-related viruses (including SARS CoV-2) as it belongs to the same genre as Betacoronavirus 1, with a similar morphology and size, but at a Bio Safety Level 2.

3

Evaluation of the bactericidal, sporicidal, fungicidal, levurocidal disinfectant efficacy of superheated dry steam

EcarnRicert Srl Laboratory - a Mérieux NutriSciences Company - Monte di Malo (VI)

The bactericidal, sporicidal, fungicidal, levurocidal efficacy was assessed according to **the French regulation AFNOR NF T 72-110: 2019** (Method of disinfection of surfaces by steam with or without contact - Determination of bactericidal, fungicidal, levurocidal, sporicidal and virucidal activity).

The test product used in the experimental condition adopted causes reduction greater than or equal to:

- **5 log (99,999%)** for Escherichia coli, Pseudomonas aeruginosa and Enterococcus hirae
- **3 log (99.9%)** for Bacillus subtilis
- **5 log (99.999%)** for Candida albicans and Aspergillus brasiliensis

With 1 application of continuous steam with a pass at a speed of 10 cm/sec and at a distance of 5 mm from the surface.

4

Evaluation of the virucidal efficacy (H1N1) of superheated dry steam and HP MED

Laboratory Biolab - Vimodrone (MI) - Italy

Virucidal efficacy was assessed according to European standard EN 14476 (quantitative test in suspension for the evaluation of virucidal activity in the medical area).

Based on the results obtained, in the experimental condition adopted, **the product under examination causes a reduction greater than or equal to 4 Log (99.99%) against Human Influenza A (H1N1) after 15 seconds.**

5

Evaluation of the bactericidal activity of superheated dry steam and HP MED

Cantonal Institute of Microbiology - Bellinzona - Switzerland

Sanitisation has proved **effective for the disinfection of a work surface previously contaminated** with the following microorganisms: Escherichia coli, Staphylococcus coagulase negative, Klebsiella pneumoniae and Proteus mirabilis.

After the treatment, **no bacterial growth was found on the surfaces.**

6

Effectiveness of superheated dry steam and HP MED to eradicate Cimex lectularius infestations

Pest 2000&Pest 3000 - Pest Control Management Services - Milan - Italy

The evidence shows that the product concerned **kills 100% of the eggs and 90% of the adult bed bugs at the first pass.** In the field tests it **completely eliminated the Cimex infestation** with between two and three treatments, also successfully degrading the sticky substance that binds the eggs to the surfaces, reducing the smell of bedbugs and eliminating the traces of excrement thanks to the combined use of steam and HP MED.

7

Evaluation of the bactericidal activity of superheated dry steam and HP MED against methicillin resistant Staphylococcus aureus (MRSA)

Cantonal Institute of Microbiology - Bellinzona - Switzerland

The bactericidal activity on two strains of Methicillin Resistant Staphylococcus Aureus (MRSA) was analysed on different surfaces.

Use for 30 seconds proved **effective for the sanitisation of various materials**, including stainless steel and melamine coatings, with a reduction in the bacterial load of 4 logarithms, while as regards ceramics, a bacterial residue was found only for the most resistant MRSA strain (3 logarithms).

This type of test demonstrates a reduction in the bacterial load of 4 log and therefore a reduction of up to 99.99%.

8

Evaluation of the antimicrobial activity of superheated dry steam and HP MED in a hospital setting

Orthopaedics and Traumatology Unit and Microbiology Unit - San Carlo Borromeo Hospital - Milan - Italy

The product concerned showed activity on several Gram positive and Gram negative bacteria and on different types of fungi. **Antimicrobial activity** has been found on inert equipment, environments and materials such as plastic, metal and glass. Preliminary tests carried out on inert materials demonstrated a significant reduction of up to 99.999% of the tested species.

Under standard operating conditions, the sanitisation carried out caused a reduction in the total microbial load of 91.6%, compared with 88.8% with the traditional method of sanitisation (using chemical products).

9

Effectiveness in reducing the microbial load of surfaces of superheated dry steam and HP MED

Swinburne University of Technology - Australia

30 seconds of treatment with superheated dry steam and HP Med proved **effective in reducing the microbial load by 99.999% for Gram positive, Gram negative, filamentous fungi and yeasts. 30 seconds of treatment reduced the spores by 97%.**

10

Superheated dry steam and HP MED test on ambulances

Hospital of San Severo - ASL Foggia - Italy

Experimentation in a real context shows that this is a **valid method for sanitising ambulances because it drastically reduces the total microbial load present on surfaces.**