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Lodz, 10-07-2020

Certificate of analysis No K/246/01/2020

**Subject of analysis:** UV-C STERILON 72W with PHILIPS lighting TUV (2x36W)

**Klient:** Lena Ligthing S.A  
63-000 Środa Wlkp.  
ul. Kórnicka 52

The device for testing delivered by the Customer: 26-06-2020  
The tests began: 26-06-2020  
The tests finished: 01-07-2020

| Type of analysis   | Method                              | Results   |
|--|-------------------------------------|---|
| Microbial parameters   |                                     |   |
| Antimicrobial efficacy against:                                | Own methodology<br>Instruction I-85 | Percent reduction in the number of<br>microorganisms from 1 m |
|  |                                     | R <sub>15min</sub>  |
| <i>Staphylococcus aureus</i> ATCC25923                         |                                     | 100%  |
| <i>Pseudomonas aeruginosa</i> ATCC 27853                       |                                     | 100%  |
| <i>Enterococcus faecalis</i> TCC 29212                         |                                     | 100%  |
| <i>Saccharomyces cerevisiae</i> (drożdże) ATCC 9763            |                                     | 100%  |
| <i>Aspergillus brasiliensis</i> ( <i>A. niger</i> ) ATCC 16404 | 98%                                 |   |

Authorized:

Accepted:

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**Evaluation of the antimicrobial effectiveness of UV-C STERILON 72W with PHILIPS lighting TUV (2x36W)**

**Aim and scope of the study**

The aim of the study was to determine the antimicrobial effectiveness of UV-C STERILON 72W with PHILIPS lighting TUV (2x36W) (Certificate of analysis K/246/01/2020), against microorganisms: *Staphylococcus aureus* ATCC 25923, *Pseudomonas aeruginosa* ATCC 27853, *Enterococcus faecalis* ATCC 29212, *Saccharomyces cerevisiae* (drożdże) ATCC 9763, *Aspergillus brasiliensis* (*A. niger*) ATCC 16404 (molds).

**Experimental procedure**

The tests were carried out in accordance with own methodology developed in Laboratory (Instruction No. I-86), item 6.4 "Checking the effectiveness of UV lamps".

A suspension of the test strain (density 1 on the McFarland scale) was prepared, followed by a series of ten-fold dilutions. 0.1 mL suspension was taken from the appropriate dilution and spread on 90 mm diameter plates with appropriate agar medium (TSA, TSYEA YGC) to grow to 300 cfu (colony forming units). Control plates (without UV- disinfection) were placed in an incubator at the appropriate temperature for the given microorganism (37° C, 25° C) and incubated for 48 hours to 5 days. The second open test plate was placed within one meter of the device and UV-disinfected for 15 minutes. The plates after disinfection were incubated in an incubator at the appropriate temperature for the given microorganism (37 ° C, 25 ° C) for a specified time (from 48 hours to 5 days). After incubation, the grown colonies were counted on control and test plates (disinfected with UV rays). The test was carried out three times for each microorganism, and then the percentage decrease in the number of microorganisms was calculated according to formula (1).

$$(1) R = 100 - (b \times 100/k)$$

where:

R- percent reduction in the number of microorganisms

b- average number of microorganisms after UV disinfection [cfu /ml],

k- average number of microorganisms on control plates (without UV disinfection) [cfu /ml],



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**Table 1. Antimicrobial effectiveness of UV-C STERILON 72W with PHILIPS lighting TUV (2x36W)**

| Results   |   |     |  |   |      |
|---|---|-----|--|---|------|
| Strain  | Number of microorganisms on control plates without UV-disinfection [cfu/mL] |     | Number of microorganisms after 15 minutes of UV disinfection from 1 m distance [cfu /mL] |   |      |
|   |   | k   |  | b | R[%] |
| <i>Staphylococcus aureus</i><br>ATCC 25923                                | 260   | 258 | 0  | 0 | 100  |
|   | 255   |     |  |   |      |
|   | 258   |     |  |   |      |
| <i>Pseudomonas aeruginosa</i><br>ATCC 27853                               | 156   | 154 | 0  | 0 | 100  |
|   | 151   |     |  |   |      |
|   | 155   |     |  |   |      |
| <i>Enterococcus faecalis</i><br>ATCC 29212                                | 99  | 100 | 0  | 0 | 100  |
|   | 100   |     |  |   |      |
|   | 101   |     |  |   |      |
| <i>Saccharomyces cerevisiae</i> (yeast)<br>ATCC 9763                      | 104   | 102 | 0  | 0 | 100  |
|   | 100   |     |  |   |      |
|   | 103   |     |  |   |      |
| <i>Aspergillus brasiliensis</i> ( <i>A. niger</i> )<br>(molds) ATCC 16404 | 101   | 99  | 0  | 0 | 98   |
|   | 99  |     |  |   |      |
|   | 98  |     |  |   |      |

**Conclusion**

After 15 minutes of UV disinfection with UV-C STERILON 72W with PHILIPS lighting TUV (2x36W) from 1 m a 100% reduction was found for the bacteria tested and a 98% reduction for the mold *Aspergillus brasiliensis* (*A. niger*) ATCC 16404.

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