

1 SUMMARY

According to the commission, the effectiveness of the UVC-based air disinfection device SteriWhite Air Q600 was to be investigated with regards to a model bacterial strain by means of the GWP working instruction "AV 384 room air filter: microbial performance". In addition, the UVC emission and the noise level of the device during operation should be measured. For this purpose, a defined air pollution was caused in a 40m³ test tent and the cleaning performance of the device was determined by means of air sampler and plate counting method (decay curve). With regard to the gram-positive bacterium *B. subtilis* DSM10, the investigated device needs 30 minutes to clean the air pollution for 90%. The measurement of the UVC leakage emissions of the test object showed a harmless level of radiation.

2 ORDER

Sunny Air Solutions GmbH commissioned GWP Gesellschaft für Werkstoffprüfung mbH to test the Hönle SteriWhite Air Q600 air purifier according to the AV384 developed in this context, with regards to disinfection effectiveness and UVC and noise emissions during operation.

3 REHEARSE

The following sample was made available to the GWP by the customer. The GWP had no influence on the sampling.
Table 1: Sample receipt | Date: 30.06.2021 | GWP-No.: 0595-1 | Customer No.: n/a | Designation: Hoenle SteriWhite Air Q600 | Remark: Room air sterilizer type UV used for *B. subtilis*

4 METHODS

4.1 Microbial power according to GWP AV384

To determine the microbial performance, a test tent (GWP mbH) with a size of 40 m³ was erected on a laboratory scale. In this test tent, a defined bacterial concentration with the laboratory model organism *B. subtilis* DSM 10 is generated by means of aerosol generators (PARI GmbH). For the investigation, a very well characterized and safe laboratory bacteria strain was used to exclude the danger of escaping microorganisms. The strain was selected as follows with regard to its UVC resistance.

The UVC radiation dose required to denature the gram-positive bacterium *B. subtilis* DSM10 corresponds approximately to 5 times the dose of radiation required to denature the SARS-CoV-2 virus (cf. Table 3). Consequently, the results of the tests with this bacterium represent an extreme value and can also be transferred to other pathogens.

Determination of UVC leakage radiation

The measurement of any escaping UVC radiation was carried out by means of a UVC sensor directly on the device, at distances of 10 cm and 100 cm from the device. For evaluation, the maximum values and a background value of the room without a device were recorded.

5 RESULTS AND EVALUATION

The disinfection time for exposure to *B. subtilis* DMS10 was only 30 minutes to fall below a residual germ load of 10 % of the original concentration in the 40 m³ test tent (laboratory report 21405-31). With regard to airborne pollution that requires a higher UVC radiation dose, no extended disinfection time, as shown in laboratory report 21405-31, must be expected. With regard to UVC leakage radiation, the examined test specimen falls well below the limit value of a surface radiation of 30 Ws/m² within 24h. Thus, the device can be certified as safe to use.

CONFORMITY STATEMENT

The t90 time is 30 min. The device meets the conformity requirements of the GWP AV 384, current edition: the t90 time must be less than 60 minutes

REPORTERS

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