



Fraunhofer

**TESTED[®]
DEVICE**

Protect2Clean GmbH
Vipers VMP50

Report No. PR 1901-1092

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer
Protect2Clean GmbH
Erzberg 5
38126 Brunswick
Germany

Component tested

Category: Materials
Subcategory: Consumables
Product name: Disposable mop Vipers VMP50
(manufacturing date: 8/2018; material: 100% polyester; color: white; charge number: C180702-02; size: 40 cm)

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: ISO 14644-1; VDI 2083 Part 9.2
The norms stated generally refer to the version valid at the time of the tests.

Test devices: Optical particle counter:
LasAir II 110 with measuring ranges $\geq 0.1 \mu\text{m}$, $\geq 0.2 \mu\text{m}$, $\geq 0.3 \mu\text{m}$, $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ and $\geq 5.0 \mu\text{m}$

Test environment parameters:

- Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1
- Airflow velocity:.....0.45 m/s
- Airflow pattern:..... vertical laminar flow
- Temperature:22°C ± 0.5°C
- Relative humidity: 45 % ± 5 %

Test procedure parameters: Test bench (according to ISO 9073-10):

- Motion cycle:
 - Linear compression s:..... 120 mm
 - Torsion:180°
- Cycle time t: 1 s
- Sampling chamber:.....none
- Duration of stress applied to test piece: 100 min
- Distance between particle counting probe and test piece:..... 30 mm

Test result / Classification

When operated under the specified test conditions, the Disposable mop Vipers VMP50 is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Test parameter(s)	Air Cleanliness Class
Linear compression = 120 mm Torsion = 180° Cycle time t = 1 s	4
Overall result	4

The measuring devices used for the qualification tests are calibrated at regular intervals; their results can be traced back to national and international standards. In cases where no national standards exist, the test procedure implemented complies with the technical regulations and norms applicable at the time of the test. The relevant documentation can be viewed on request at any time.

Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

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on behalf of 
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