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TESTED[®] DEVICE

M. Braun Inertgas-Systeme GmbH
Project 10149 - Flowbox
Report No. MB 1507-776

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer
 M. Braun Inertgas-Systeme GmbH
 Dieselstraße 31
 85748 Garching
 Germany

Component tested

Category: Services
 Subcategory: Cleanroom Acceptance
 Product name: Project 10149 – Flowbox (inert) under atmosphere (manufacturing date: 2015; prototype)

Test result / Classification

When operated under the specified test conditions, the Project 10149 – Flowbox (inert) under atmosphere is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Parameter	Air Cleanliness Class
blower performance = 56 % pressure difference = 1.0 mbar	2
Overall result	2

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: ISO 14644-1; VDI 2083-3
 The norms stated refer to the relevant editions applicable 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 procedure parameters:

- Process gas: air
- Parameters during the particle measurement:
 - Desired value of the blower: 56 %
 - Pressure difference: 1.0 mbar
 - H₂O: 24.9 ppm
 - O₂: none
 - Temperature: 23 °C
- Measurements in working height (60cm below the filter):
 - Airflow velocity: 0.3 m/s
 - Temperature: 22.2 °C
 - Relative air humidity: 1%

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.

For further information about the test environment and parameters, please refer to the Fraunhofer IPA test report.

Fraunhofer Institute for
 Manufacturing Engineering and Automation IPA

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 and Micromanufacturing

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Place, date of first document issued

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Place, current date

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