



Fraunhofer

**TESTED[®]
DEVICE**

Mennens Dongen B.V.
Sealed-Blok

Report No. ME 1401-689

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer: Mennens Dongen B.V.
Metaalstraat 5
5107 Dongen
The Netherlands

Component tested

Category: Automation Components

Subcategory: Transfer Systems and Bearing

Product name: Sealed-Blok (Self-Retracting Lifeline)
(article number: 13062479; serial number: 07792, model number: 3400830; manufacturing date: 6/2013)

Test result / Classification:

The Sealed-Blok (Self-Retracting Lifeline) is suitable for use in cleanrooms fulfilling the specifications of the following air cleanliness classes according to ISO 14644-1:

Measuring time	Air Cleanliness Class
0 - 100 min	7
100 - 200 min	7
200 - 300 min	7
300 - 400 min	7
400 - 500 min	7
Overall result	7

The standard measuring time was extended from 100min to 5 x 100min.

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: VDI 2083-9.1; ISO 14644-1
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 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:..... $22^\circ\text{C} \pm 0.5^\circ\text{C}$
- Relative humidity:..... $45\% \pm 5\%$

Test procedure parameters:

- Measuring time: 5 x 100 min
- Periodic running time: 1 min
- Periodic resting time: 3 min
- Moving velocity: 6.5 m/min
- Hook way: 1.5 m

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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Department of Ultraclean Technology
and Micromanufacturing

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Place, current date

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