



Fraunhofer

**TESTED[®]
DEVICE**

Memmert GmbH + Co. KG
Universal Oven UF1060
Report No. ME 1811-1085

DUPLICATE

Statement of
Qualification

Single product
Particle Emission

Statement of Qualification · Single product

Customer
 Memmert GmbH + Co. KG
 Äußere Rittersbacherstrasse 38
 91126 Schwabach
 Germany

Component tested

Category: Process Equipment
 Subcategory: Heating and Cooling
 Product name: Universal Oven UF1060
 (manufacturing date: 2019; color: stainless steel; serial number: B919.0091)

Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: ISO 14644-1, -14
 The norms stated generally refer to the version valid at the time of the tests.

Test devices: Optical particle counter:
 LasAir II 110 and LasAir III 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 \pm 0.5 °C
- Relative humidity: 45 % \pm 5 %

Test procedure parameters:

Pressure of clean air inside the heating cabinet:..... 0.5 bar

Outside:

- Temperature: 300° C
- Flap:open
- Fan:..... 100 %

Inside – Parameter Set 1:

- Temperature: 300° C
- Flap:open
- Fan:..... 100 %

Inside – Parameter Set 2:

- Temperature: 300° C
- Flap:open
- Fan: 0 %

Test result / Classification

When operated under the specified test conditions, the Universal Oven UF1060 is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanliness Class
Outside: T = 300° C; flap = open; fan = 100 %	5
Inside: T = 300° C; flap = open; fan = 100 %	5
Inside: T = 300° C; flap = open; fan = 0 %	6
Overall result	6

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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Stuttgart, September 1, 2019
 Place, date of first document issued

Department of Ultraclean Technology and Micromanufacturing

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on behalf of 
 Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA