



Fraunhofer

TESTED[®] DEVICE

Knauf AMF GmbH & Co. KG
THERMATEX Thermofon
Report No. KN 1810-1071

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer Knauf AMF GmbH & Co. KG
 Elsenthal 15
 94481 Grafenau
 Germany

Component tested

Category: Cleanroom Facilities

Subcategory: Wall/ceiling/floor/door

Product name: THERMATEX Thermofon
 (manufacturing date: 4/3/2018; color: white; article number: 00108364;
 dimension: 595 x 595 x 15 mm)

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: The ceiling system was subjected to stress as follows:

- Structure-borne noise: approx. 5 to 50 Hz
- Oscillation velocity (\emptyset):.....v = 2.3341 mm/s
- Oscillation acceleration (\emptyset):.....a = 0.3810 m/s²
- Oscillation of the system (\emptyset): s = 0.2833 mm

Test result / Classification

When operated under the specified test conditions, the ceiling system THERMATEX Thermofon 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
Structure-borne noise = approx. 5 to 50 Hz	1
Overall result	1

It must be pointed out, that according to ISO 14644-1 cleanroom classes 1 to 5 have a high filter occupancy, with the result that ceiling panels cannot be used in some cases. Cleanrooms with a horizontal displacement flow form an exception to this.

The test result may be affected by the surrounding ceiling system, in particular the material pairing between the ceiling panel and ceiling frame, as well as other mounting accessories. Particle emission behavior should be reassessed in each assembly situation.

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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Department of Ultraclean Technology and Micromanufacturing

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on behalf of 
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