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DEVICE

Knauf Ceiling Solutions
Ecomin Alpha 15 mm
Report No. KN 2411-1576

Statement of
Qualification

Single product
Particle Emission
in Cleanroom
(atmospheric)

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Statement of Qualification · Single product

Customer

Knauf Ceiling Solutions GmbH & Co. KG
Elsenthal 15
94481 Grafenau
Germany

Component tested

Category: Cleanroom Facilities

Subcategory: Wall/Ceiling/Floor/Door

Product name: Ecomin Alpha 15 mm
(manufacturing date: 10/2/2024; color: white; grid system: KCS T 24; size: 1200 x 1200 x 15 mm; article number: 860526)

Random sampling of particle emissions (airborne) at representative sites in cleanroom under atmospheric conditions

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 ≥ 0.1 µm, ≥ 0.2 µm, ≥ 0.3 µm, ≥ 0.5 µm, ≥ 1.0 µm and ≥ 5.0 µm

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
- Room temperature: ..... 22 °C ± 0.5 °C
- Relative humidity: ..... 45 % ± 5 %

Test procedure parameters: The ceiling system was subjected to stress as follows:

- Structure-borne noise: ..... approx. 50 Hz
- Oscillation velocity (Ø): ..... v = 2.1337 mm/s
- Oscillation acceleration (Ø): ..... a = 0.5357 m/s²
- Deflection of the system (Ø): ..... s = 0.0734 mm

Test result / Classification

When operated under the specified test conditions (room temperature: 22 °C ± 0.5 °C; relative humidity: 45 % ± 5 %), the ceiling system Ecomin Alpha 15 mm is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:

Test parameter(s)	Air Cleanlines Class
Structure-borne noise = approx. 50 Hz	1
Overall result	

It must be pointed out, that according to ISO 14644-1 cleanrooms classes 1 to 5 have a high filter occupancy, with the result that large-surface ceiling systems cannot be used in some cases. Cleanrooms with a horizontal displacement flow form an exception to this.
The test result may be influenced by the surrounding ceiling system, in particular the material pairing between the light and ceiling frame, as well as other assembly accessories. Particle emission behavior should be re-assessed in the respective assembly situation.
The cut edges/back are made of very porous material. Therefore, the use of the test piece in clean/hygienic areas is considered to be critical.

Please note: Transport damages, incorrect installation, aging behavior, corrosion etc. can influence the test result.

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
Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA

This document only applies to the named product in its original state and is valid for a period of 5 years from the date the first document was issued. The document can be verified under **www.tested-device.com**.

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