



**Fraunhofer**

**TESTED<sup>®</sup>  
DEVICE**

Knauf AMF GmbH & Co. KG  
THERMATEX Alpha ONE  
**Report No. KN 1804-1030**

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/Celling/Floor/Door
Product name:	Ceiling panel THERMATEX Alpha ONE (manufacturing date: 12/25/2017; article number: 00207197; size: 600 x 600 x 24 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 $\geq 0.1\text{ }\mu\text{m}$ , $\geq 0.2\text{ }\mu\text{m}$ , $\geq 0.3\text{ }\mu\text{m}$ , $\geq 0.5\text{ }\mu\text{m}$ , $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$
Test environment parameters:	<ul style="list-style-type: none"><li>Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1</li><li>Airflow velocity:..... 0.45 m/s</li><li>Airflow pattern:..... vertical laminar flow</li><li>Temperature: ..... 22 °C <math>\pm</math> 0.5 °C</li><li>Relative humidity: ..... 45 % <math>\pm</math> 5 %</li></ul>
Test procedure parameters:	<ul style="list-style-type: none"><li>Exposure to structure-borne sound: ..... approx. 5-50 Hz</li><li>Average oscillation velocity: ..... <math>v = 2.6828\text{ mm/s}</math></li><li>Average oscillation acceleration ..... <math>a = 0.9620\text{ m/s}^2</math></li><li>Average system deflection ..... <math>s = 0.0084\text{ mm}</math></li></ul>

Test result / Classification	When operated under the specified test conditions, the ceiling panel THERMATEX Alpha ONE is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Class according to ISO 14644-1:
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Test parameter	Air Cleanliness Class
Exposure to structure-borne sound: approx. 5-50 Hz	2
Overall result	2

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	KN 1202-589 Report No. first document	Stuttgart, April 13, 2012 Place, date of first document issued
Department of Ultraclean Technology and Micromanufacturing	KN 1804-1030 Report No. current document	Stuttgart, June 28, 2018 Place, current date
Nobelstrasse 12 70569 Stuttgart Germany	on behalf of Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA	