



Fraunhofer

TESTED[®] DEVICE

igus GmbH
TH3.25.2/26.070.8
Report No. IG 2304-1412

DUPLICATE

Statement of
Qualification

Single product
Particle Emission
in Cleanroom
(atmospheric)

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| Customer | igus GmbH Spicher Strasse 1a 51147 Cologne Germany |
| Component tested | |
| Category: | Energy Supply |
| Subcategory: | Cable Guiding Systems |
| Product name: | hygenic design e-chain TH3.25.2/26.070.8 (manufacturing date: 9/13/2024; color: blue; article number: TH3.25.2/26.070.8; serial number: TH3.25) |

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

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| 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">Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1Airflow velocity:.....0.45 m/sAirflow pattern:..... vertical laminar flowRoom temperature:22 °C ± 0.5 °CRelative humidity: 45 % ± 5 % |
| Test procedure parameters: | <ul style="list-style-type: none">Installation height: h = 180 mmBending radius: r = 70 mmStroke length: s = 800 mmParameter Set 1:.....v₁ = 0.5 m/s; a₁ = 1.0 m/s²Parameter Set 2:.....v₂ = 1.0 m/s; a₂ = 2.0 m/s²Parameter Set 3:.....v₃ = 2.0 m/s; a₃ = 4.0 m/s² |

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| Test result / Classification | When operated under the specified test conditions (room temperature: 22 °C ± 0.5 °C; relative humidity: 45 % ± 5 %), the hygenic design e-chain TH3.25.2/26.070.8 is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1: |
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| Test parameter(s) | Air Cleanlines Class |
|---|----------------------|
| v ₁ = 0.5 m/s; a ₁ = 1.0 m/s ² | 1 |
| v ₂ = 1.0 m/s; a ₂ = 2.0 m/s ² | 1 |
| v ₃ = 2.0 m/s; a ₃ = 4.0 m/s ² | 1 |
| Overall result | 1 |

Please note: Transport damages, incorrect installation, aging behavior, 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.

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| Fraunhofer Institute for Manufacturing Engineering and Automation IPA | IG 2304-1412 Report No. first document | Stuttgart, November 22, 2024 Place, date of first document issued |
| Department of Ultraclean Technology and Micromanufacturing | -- Report No. current document | -- Place, current date |
| Nobelstrasse 12 70569 Stuttgart Germany | on behalf of Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA | |