



Fraunhofer

**TESTED[®]
DEVICE**

KNOLL
REGEN-ESDVINYLO1
Report No. KN 1811-1076

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer
 Knoll, Inc.
 329 Railroad St.
 East Greenville, PA 18041
 USA

Component tested

Category: Working Place and Operator

Subcategory: Chairs

Product name: ReGeneration Task Chair, Full Upholstery, ESD Vinyl
 (manufacturing date: 10/18/2018; color: black; batch number: 04564325-1)

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:

- Type of stress applied:pulsating vertical force
- Location of stress impact: midpoint of the seat/backrest
- Seat:
 - Force:.....F = 1200 N
 - Cycles:..... 12/min
- Backrest:
 - Force:.....F = 350 N
 - Cycles:..... 12/min

Test result / Classification

When operated under the specified test conditions, the ReGeneration Task Chair, Full Upholstery, ESD Vinyl 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
Seat (F = 1200 N; 12 cycles/min)	3
Backrest (F = 350 N; 12 cycles/min)	2
Overall result	3

Special attention should be paid to the lower side of the seat element (part towards the floor). The inner part of the seat cushion is not covered on this side (see picture below). So over time the emission of large particles could occur. Additionally, this part of the chair will be very difficult to be cleaned for usage in a cleanroom. Therefore, an application in a cleanroom should be observed over time.

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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