



**Fraunhofer**

**TESTED<sup>®</sup>  
DEVICE**

W. L. Gore & Associates  
Trackless Cable #0728  
**Report No. GO 1708-940**

DUPLICATE

Statement of  
Qualification

Particle Emission

# Statement of Qualification

**Customer**  
 W. L. Gore & Associates  
 Nordring 1  
 91785 Pleinfeld  
 Germany

**Component tested**

Category: Energy Supply  
 Subcategory: Cable Systems  
 Product name: GORE Low Charging Trackless Cable #0728  
 (manufacturing date: 6/29/2017; color: white; serial number: #0728;  
 part number: GKT-FTFH-02-03)

## Test result / Classification

When operated under the specified test conditions, the GORE Low Charging Trackless Cable #0728 is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanliness Class
$v_1 = 0.5 \text{ m/s}; a_1 = 1.0 \text{ m/s}^2$	1
$v_2 = 1.0 \text{ m/s}; a_2 = 2.0 \text{ m/s}^2$	1
$v_3 = 2.0 \text{ m/s}; a_3 = 4.0 \text{ m/s}^2$	1
<b>Overall result</b>	<b>1</b>

## 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:

- Bending radius: .....r = 52.5 mm
- Stroke length:..... s = 820 mm
- Clamped cable length:.....l = 680 mm
- Parameter Set 1:..... $v_1 = 0.5 \text{ m/s}; a_1 = 1.0 \text{ m/s}^2$
- Parameter Set 2:..... $v_2 = 1.0 \text{ m/s}; a_2 = 2.0 \text{ m/s}^2$
- Parameter Set 3:..... $v_3 = 2.0 \text{ m/s}; a_3 = 4.0 \text{ m/s}^2$

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.

For further information about the test environment and parameters, please refer to the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

GO 1708-940  
 Report No. first document

Stuttgart, October 20, 2017  
 Place, date of first document issued

Department of Ultraclean Technology and Micromanufacturing

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 Report No. current document

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 Place, current date

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on behalf of   
 Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA