



**Fraunhofer**

**TESTED<sup>®</sup>  
DEVICE**

DENSO WAVE Inc.  
PC (VG1950)

**Report No. DE 2006-1161**

DUPLICATE

Statement of  
Qualification

Single product  
Biological Resistance

Customer

DENSO WAVE Inc.  
1, Yoshiike, Kusaki, Agui-cho, Chita-gun  
470-2297 Aichi  
Japan

Component tested

Category:

Materials

Subcategory:

Plastics

Product name:

PC (VG1950)  
(manufacturing date: 4/2020; color: black; serial number: PLATE\_2020-13)

Biological resistance test

Standards/Guidelines:

ISO 846  
The norms stated generally refer to the version valid at the time of the tests.

Test environment parameters:

Microbiological laboratory:.....S2

Test procedure parameters:

- Procedure A (resistance to fungi) using spore suspension of spores containing the following test strains:  

– *Aspergillus niger* ASM 1957

– *Penicillium pinophilum* ASM 1944

– *Chaetomium globosum* ASM 1962

– *Trichoderma virens* ASM 1963

– *Paecilomyces variotii* ASM 1961
- Procedure C (resistance to bacteria) using bacteria suspension containing the following test strain: *Pseudomonas aeruginosa* DSM 1253
- Incubation at 29±1 °C with a relative humidity of ≥95 %; visually inspection after four (4) weeks

Test result / Classification

The biological resistance of PC (VG1950) regarding to growth intensity was investigated in accordance with ISO 846 and classified with the following result:

Biological resistance	Growth intensity	Classification
Procedure A (resistance to fungi)	2	weak
Procedure C (resistance to bacteria)	1	good
Overall result	weak	

The classification is based on a worst-case consideration of the Procedures A and C. In the process, growth intensity was assessed according to the classification system used in ISO 846:

Classification: fungi (Procedure A)

0 = excellent2, 3 = weak  
1a, 1b, 1c = good4, 5 = none

Classification: bacteria (Procedure C)

0 = excellent2 = weak  
1 = good3 = none

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

DE 1409-725  
Report No. first document

Stuttgart, July 15, 2015  
Place, date of first document issued

Department of Ultraclean Technology and Micromanufacturing

DE 2006-1161  
Report No. current document

Stuttgart, November 4, 2020  
Place, current date

Nobelstrasse 12  
70569 Stuttgart  
Germany

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