



**Fraunhofer**

**TESTED<sup>®</sup>  
DEVICE**

DENSO WAVE Inc.  
Fluorine (09811)  
**Report No. DE 1409-725**

DUPLICATE

Statement of  
Qualification

Biological Resistance

# Statement of Qualification

**Customer**  
DENSO WAVE Inc.  
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Japan

## Component tested

Category: Materials  
Subcategory: Plastics  
Product name: Fluorine (09811)  
(manufacturing date: 7/2014; color: black)

## Biological resistance test

Standards/Guidelines: ISO 846; VDI 2083-18  
The norms stated refer to the relevant editions applicable at the time of the tests.

Test environment parameters: Microbiological laboratory:.....S2

Test procedure parameters:

- Fungus test (Procedure A) using spore suspension containing:
  - *Aspergillus niger*
  - *Penicillium funiculosum*
  - *Paecilomyces variotii*
  - *Gliocladium virens*
  - *Chaetomium globosum*
- Bacteria test (Procedure C) using bacteria suspension containing *Pseudomonas aeruginosa*
- Incubation at 24 °C (Procedure A) respectively 29 °C (Procedure C) and 95 % relative humidity. Visual analysis after four (4) weeks

## Test result/Classification

Biological resistance	ISO growth intensity	Classification
Fungi (Procedure A)	2	good
Bacteria (Procedure C)	1	very good
<b>Overall result</b>	<b>2</b>	<b>good</b>

Biological resistance has been classified on the basis of a worst-case consideration of Procedures A and C. In the process, growth intensity was assessed according to the classification system used in ISO 846:

0 = excellent  
1 = very good  
2 = good  
3 = poor  
4 = very poor  
5 = 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.

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

Fraunhofer Institute for  
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