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DEVICE

DENSO WAVE Inc.
Fluorine (F201)
Report No. DE 1409-725

Statement of
Qualification

Chemical Resistance

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Statement of Qualification

Customer

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

Component tested

Category: Materials

Subcategory: Plastics

Product name: Fluorine (F201)
(manufacturing date: 7/2014; color: black)

Chemical resistance test

Standards/Guidelines: ISO 2812-1
The norms stated refer to the relevant editions applicable at the time of the tests.

Testing equipment:
- Microscope
- Camera

Test environment parameters: Temperature: ..... 22 °C ± 0.5 °C

Test procedure parameters:
- Immersion method
- Chemicals: ..... Formalin 37 %
  ..... Ammoniac 25 %
  ..... Hydrogen peroxide 30 %
  ..... Sulphuric acid 5 %
  ..... Phosphoric acid 30 %
  ..... Peracetic acid 15 %
  ..... Hydrochloric acid 5 %
  ..... Isopropanol 100 %
  ..... Sodium hydroxide 5 %
  ..... Sodium hypochlorite 5 %
- Incubation time: ..... 1 h, 3 h, 6 h, 24 h

Test result / Classification

Chemical resistance	1 h	3 h	6 h	24 h
Formalin 37 %	0	0	0	0
Ammoniac 25 %	0	0	0	1
Hydrogen peroxide 30 %	0	0	0	0
Sulphuric acid 5 %	0	0	0	0
Phosphoric acid 30 %	0	0	0	0
Peracetic acid 15 %	0	0	1	1
Hydrochloric acid 5 %	0	0	0	0
Isopropanol 100 %	0	0	0	0
Sodium hydroxide 5 %	0	0	0	0
Sodium hypochlorite 5 %	0	0	0	0
Classification	**0 / excellent**			

Chemical resistance has been classified on the basis of a worst-case consideration. In the process, damage was assessed according to the classification system used in ISO 4628-1 and VDI 2083-17:

0 = excellent
1 = very good
2 = good
3 = weak
4 = very weak
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
Manufacturing Engineering and Automation IPA

Department of Ultraclean Technology
and Micromanufacturing

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

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Place, current date

i. A.
Udo Gommel, Project Manager Fraunhofer IPA

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