



# Fraunhofer

## TESTED<sup>®</sup> DEVICE

DENSO WAVE Inc.  
AC4C-T6 (buff + plating)  
**Report No. DE 2006-1161**

DUPLICATE

Statement of  
Qualification

Single product  
Chemical Resistance

Statement of Qualification · Single product

Customer	DENSO WAVE Inc. 1, Yoshiike, Kusaki, Agui-cho, Chita-gun 470-2297 Aichi Japan
Component tested	
Category:	Materials
Subcategory:	Metals
Product name:	AC4C-T6 (buff + plating) (manufacturing date: 4/2020; serial number: PLATE_2020-01)
Chemical resistance test	
Standards/Guidelines:	VDI 2083 Part 17; ISO 2812-1; ISO 4628-1 The norms stated generally refer to the version valid at the time of the tests.
Testing equipment:	<ul style="list-style-type: none"><li>Microscope</li><li>Camera</li></ul>
Test environment parameters:	Temperature:.....22 °C ± 0.5 °C
Test procedure parameters:	Immersion method: <ul style="list-style-type: none"><li>Chemicals:..... Formalin 37 % ..... Ammoniac 25 % ..... Hydrogen peroxide 30 % ..... Sulfuric acid 5 % ..... Phosphoric acid 30 % ..... Peracetic acid 15 % ..... Hydrochloric acid 5 % ..... Isopropanol 100 % ..... Sodium hydroxide 5 % ..... Sodium hypochlorite 5 %</li><li>Incubation time: ..... 1 h, 3 h, 6 h, 24 h</li></ul>

Test result / Classification

The chemical resistance of AC4C-T6 (buff + plating) was classified according to ISO 4628-1 and VDI 2083 Part 17 with the following result:

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

The classification is based on a worst-case consideration. In the process, damage was assessed according to the classification system used in ISO 4628-1 and VDI 2083 Part 17:

0 = excellent                      3 = weak  
1 = very good                    4 = very weak  
2 = good                            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.

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	