valid until: June 6, 2030

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DEVICE

Kawasaki Robotics GmbH
Washer M3
Report No. KA 2505-1627

Statement of
Qualification

Single product
Chemical Resistance

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Statement of Qualification · Single product

Customer

Kawasaki Robotics GmbH
Im Taubental 32
41468 Neuss
Germany

Tested product

Category: Materials

Subcategory: Plastics

Product name: Washer M3 (Seal)
(manufacturing date: 1/2024; color: silver/black; article number: 60341-0080)

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.

Test 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 %
  Sulfuric acid 5 %
  Phosphoric acid 30 %
  Hydrochloric acid 5 %
  Isopropanol 100 %
  Sodium hydroxide 5 %
  Sodium hypochlorite 5 %
- Incubation time: 1 h, 3 h, 6 h, 24 h

Test result / Classification

The chemical resistance of Washer M3 (Seal) 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	0	**0**
Phosphoric acid 30 %	0	0	0	**0**
Hydrochloric acid 5 %	1	2	3	**4**
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
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.

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

Business unit
Testing and Certification

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-- — Place, current date

on behalf of
Dr.-Ing. Frank Bürger, head of business unit Testing and Certification

This document only applies to the named product in its original state and is valid for a period of 5 years from the date the first document was issued. The document can be verified under **www.tested-device.com**.