



Fraunhofer

TESTED[®] DEVICE

KUKA Deutschland GmbH
LBR iisy 11 R1300 CR
Report No. KU 2303-1404

Statement of
Qualification

Single product
Outgassing Behavior
Inorganic Acids

Statement of Qualification · Single product

Customer

KUKA Deutschland GmbH
Zugspitzstrasse 140
86165 Augsburg
Germany

Component tested

Category: Automation Components
Subcategory: Robotics
Product name: LBR iisy 11 R1300 CR
(manufacturing date: 1/10/2024; color: white and orange; weight: 46.3kg; serial number: 4561014)

Emission chamber measurements with gas impingement in combination with ion chromatography (IC)

Standards/Guidelines: ISO 14644-8, -15; VDI 2452 Part 1 (impinger); ISO 10304-1 (anions); VDI 2083 Part 17
The norms stated generally refer to the version valid at the time of the tests.

Test devices:

- Measuring station:.....Metrohm Professional IC 850
- Sampling chamber:.....Markes International µCTE

Sample storage:

- Pre-conditioning
 - Cleanroom Air Cleanliness Class (according to ISO 14644-1):.....ISO 1
 - Airflow velocity:.....0.45 m/s
 - Airflow type:..... vertical laminar flow
 - Temperature:22 °C ± 0.5 °C
 - Relative humidity: 45 % ± 5 %
 - Purified air: VOC-filtered

Test procedure parameters: Outgassing test temperature:..... 23 °C

Test result / Classification

The outgassing behavior of the robot LBR iisy 11 R1300 CR in operation at the stated temperature was investigated according to VDI 2083 Part 17 and ISO 14644-15. Based on the outgassing rates determined for the specific units, the following material classification was made for the corresponding Contaminant Category:

| Contaminant Category (x) | SER _u ¹⁾ 23 °C [g/unit·s] | ISO-ACC ₈ Class (x) based on 23 °C |
|---|---|---|
| Fluoride (HF) | < 7.0 x 10 ⁻⁹ | < -8.2 |
| Chloride (HCl) | < 7.0 x 10 ⁻⁹ | < -8.2 |
| Bromide (HBr) | < 7.0 x 10 ⁻⁹ | < -8.2 |
| Nitrate (HNO ₃) | < 7.0 x 10 ⁻⁹ | < -8.2 |
| Phosphate (H ₃ PO ₄) | < 7.0 x 10 ⁻⁹ | < -8.2 |
| Sulfate (H ₂ SO ₄) | < 7.0 x 10 ⁻⁹ | < -8.2 |

¹⁾SER_u: Unit-specific emission rate

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.