



**Fraunhofer**

**TESTED<sup>®</sup>  
DEVICE**

igus GmbH  
RN342

**Report No. IG 2110-1268**

DUPLICATE

Statement of  
Qualification

Single product  
Outgassing Behavior  
Inorganic Acids

Customer

igus GmbH  
Spicher Strasse 1a  
51147 Cologne  
Germany

Component tested

Category:Materials  
Subcategory:Plastics  
Product name:Tile made from RN342 material  
(manufacturing date: 7/13/2021; color: black; article number: MAT0062255)

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 temperatures: .....23 °C and 90 °C

Test result / Classification

The outgassing behavior of the tile made from RN342 material at the stated temperatures was investigated according to VDI 2083 Part 17 and ISO 14644-15. Based on the outgassing rates determined for the specific surfaces, the following material classification was made for the corresponding Contaminant Category:


Contaminant Category (x)	SER <sub>a</sub> <sup>1)</sup> 23 °C [g/m²s]	SER <sub>a</sub> <sup>1)</sup> 90 °C [g/m²s]	ISO-ACC <sub>m</sub> Class (x) based on 23 °C
Fluoric acid (HF)	< 2.9 x 10 <sup>-9</sup>	< 2.9 x 10 <sup>-9</sup>	< -8.5
Hydrochloric acid (HCl)	< 2.9 x 10 <sup>-9</sup>	< 2.9 x 10 <sup>-9</sup>	< -8.5
Hydrobromic acid (HBr)	< 2.9 x 10 <sup>-9</sup>	< 2.9 x 10 <sup>-9</sup>	< -8.5
Nitric acid (HNO <sub>3</sub> )	< 2.9 x 10 <sup>-9</sup>	< 2.9 x 10 <sup>-9</sup>	< -8.5
Phosphoric acid (H <sub>3</sub> PO <sub>4</sub> )	< 2.9 x 10 <sup>-9</sup>	< 2.9 x 10 <sup>-9</sup>	< -8.5
Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> )	< 2.9 x 10 <sup>-9</sup>	< 2.9 x 10 <sup>-9</sup>	< -8.5

<sup>1)</sup>SER<sub>a</sub>: Area-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.

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Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA