



Test Report 20230357

for:

Könitz Porzellan GmbH
Mr Stefan Suhre
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1. Test specimen:

3 samples in accordance with order by delivery note dated 25/05/2023
(Sample labelling see appendix.)

2. Date of arrival:

26/05/2023

3. Test realization:

30/05/2023 - 16/06/2023

4. Testing method:

4.1. Determination of the release of lead and cadmium from food contact materials and articles with a silicate surface according to DIN EN 1388-1:1995-11 (flat or hollowware test of ceramic articles) (1). Deviating from the standard 6 instead of 4 test specimens, following ASTM C738.

Analysis of the migration solutions regarding lead and cadmium by means of ICP-MS according to DIN EN ISO 17294-1:2007-02 and DIN EN ISO 17294-2:2017-01 (1), modified for 4 % v/v acetic acid (1).

4.2. Determination of the release of lead and cadmium from food contact materials and articles with a silicate surface according to DIN EN 1388-2:1995-11 (1) (drinking rim test). Deviating from the standard 6 instead of 4 test specimens, following ASTM C927.

Analysis of the migration solutions regarding lead and cadmium by means of ICP-MS according to DIN EN ISO 17294-1:2007-02 and DIN EN ISO 17294-2:2017-01 (1), modified for 4 % v/v acetic acid (1).

5. Sampling / Sample preparation:

See appendix.

6. Results:

See appendix.

7. Testing uncertainties:

See appendix.

8. Epilogue:

All investigations were done in view of the latest scientific-technical trends and to the best of one's knowledge and belief. The testing results exclusively refer to the test specimens. In order to avoid misinterpretations the present report may only be printed, copied and transmitted in its completeness. To copy extractions needs a written permission by the FGK.

23/06/2023

i.V. Dr. Markus Pohlmann-Lortz
Laborleiter / Laboratory Supervisor



This test report consists of 1 page and an appendix of 3 pages.

Re 1. Test specimen:

3 samples, each consisting of 6 identical specimens, labelled as
"11 4 20A 2786 - Asterix - Dorf",
"11 2 004 2791 - Großer Mohn by E.Nolde" and
"11 2 004 2792 - Hohe Sturzwelle by E.Nolde".



Figure 1: "11 4 20A 2786 - Asterix - Dorf"



Figure 2: "11 2 004 2791 - Großer Mohn by E.Nolde"



Figure 3: "11 2 004 2792 - Hohe Sturzwelle by E.Nolde"

Re 5. Sampling / Sample preparation:

Sampling and delivery to the FGK was under responsibility of the customer.

At the FGK the test specimens were cleaned and stored in acetic acid (4 % v/v) over a period of 24 hours according to the standard.

Re 6. Results:
6.1. Flatware testing

Table 1

Testing Parameter	Sample "11 4 20A 2786 - Asterix - Dorf"						Mean Value
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	
Lead [mg/L]	0.0070	0.0026	0.0035	0.0029	0.0038	0.0025	0.0037
Cadmium [mg/L]	0.174	0.160	0.211	0.224	0.198	0.163	0.188
Lead [mg/dm ²]	0.0005	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003
Cadmium [mg/dm ²]	0.0131	0.0120	0.0159	0.0168	0.0149	0.0123	0.0141
Volume [L]*	0.220	0.220	0.220	0.220	0.220	0.220	0.220
Area [dm ²]	2.93	2.93	2.93	2.93	2.93	2.93	2.93

* storage volume

6.2. Lip and rim area testing

Table 2

Testing Parameter	Sample "11 2 004 2791 - Großer Mohn by E.Nolde"						Mean Value
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	
Cadmium [mg/object]	0.0156	0.0142	0.0153	0.0152	0.0164	0.0162	0.0155
Lead [mg/object]	0.0002	0.0002	0.0002	0.0002	0.0003	0.0002	0.0002
Cadmium [mg/L]***	0.0411	0.0372	0.0403	0.0400	0.0431	0.0427	0.0407
Lead [mg/L]***	0.0003	0.0004	0.0004	0.0003	0.0005	0.0005	0.0004
Volume [L]*	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Volume [L]**	0.380	0.380	0.380	0.380	0.380	0.380	0.380

* storage volume ** internal volume *** value calculated to the internal volume

Table 3

Testing Parameter	Sample "11 2 004 2792 - Hohe Sturzwelle by E.Nolde"						Mean Value
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	
Cadmium [mg/object]	0.0007	0.0003	0.0003	0.0004	0.0004	0.0003	0.0004
Lead [mg/object]	0.0002	< 0.0001	0.0001	0.0001	0.0001	< 0.0001	< 0.0002
Cadmium [mg/L]***	0.0019	0.0009	0.0007	0.0011	0.0011	0.0007	0.0011
Lead [mg/L]***	0.0004	0.0002	0.0003	0.0003	0.0003	0.0002	0.0003
Volume [L]*	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Volume [L]**	0.380	0.380	0.380	0.380	0.380	0.380	0.380

* storage volume ** internal volume *** value calculated to the internal volume

The articles tested are in compliance with the limits of US-FDA, proposition 65 and DIN 51032 as far as available to the FGK.

Limits

Table 4: Limits for ceramic foodware according to the US - FDA guidelines CPG Sec. 545.400 (CPG 7117.06) and CPG Sec. 545.450 (CPG 7117.07):

Ceramic foodware	Lead [mg/L]	Cadmium [mg/L]
Flatware	3.0	0.5
Cups & mugs; 20 mm lip and rim area	4.0*	0.4*

* Source: Society of Glass and Ceramic Decorators SGCD, November 1, 2004: Heavy metal federal legal limits for glass and ceramic decorators.

Table 5: Limits for ceramic foodware according to the Californian guidelines ('proposition 65' etc.):

Ceramic foodware	Lead [mg/L]	Cadmium [mg/L]
Flatware	0.226	1.853*
Cups & mugs 20 mm lip and rim area	0.5	4.0

* 'Safe Harbor limits based upon OEHHA's Maximum Allowable Dose Level (MADL) for cadmium 4.1 µg/day (oral) (October 2021)' (Source: LUCIDEON Publication: Metal Release from Ceramic, Glass and Enamel Ware in Contact with Food - A Guide to Worldwide Regulations and Standards, January 2022)

Table 6: Limits for the release of lead and cadmium from ceramic foodware and glassware according to DIN 51032 (based on European directive 84/500/EEC and supplementary European directive 2005/31/EC, which refers to the European regulation 1935/2004/EC):

Ceramics & glassware: Flatware objects	Lead [mg/dm ²]	Cadmium [mg/dm ²]
Tableware, kitchenware	0.8	0.07

Ceramics & glassware: Hollowware objects	Lead [mg/L]	Cadmium [mg/L]
Tableware, kitchenware	4.0	0.3
Lip and rim area of hollow objects	2.0 [mg/object]	0.20 [mg/object]

Re 7. Testing uncertainties:

7.1./7.2. ICP-MS

Due to the acetic acid matrix as well as the low element concentrations the expanded relative total measurement uncertainties are maximum 13 %.