



Test Report 20230558

for:

Könitz Porzellan GmbH
Mr Stefan Suhre
Bahnhofstraße 2
07333 Könitz

1. Test specimen:

7 samples in accordance with order mit Lieferschein LI23/07289 vom 02.08.2023
(Sample labelling see appendix.)

2. Date of arrival:

07/08/2023

3. Test realization:

17/08/2023 - 29/08/2023

4. Testing method:

- 4.1. Determination of the release of lead and cadmium from consumer goods with silicate surface according to ASTM C 927-80 (2014) (lip and rim area test); deviating from the standard, the analysis of the migration solutions was not carried out by means of flame AAS but using an ICP-MS according to DIN EN ISO 17294-1:2007-02 and DIN EN ISO 17294-2:2017-01, modified for 4 % v/v acetic acid (1).
- 4.2. Determination of the release of lead and cadmium from consumer goods with a silicate surface based on ASTM C 738-94 (2016) (flat or hollowware test); deviating from the standard, the analysis of the migration solutions was not carried out by means of flame AAS but using an 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.

31/08/2023

i.V. Dipl.-Ing.(FH) Stefan Link
QM-Beauftragter/Stellvertretender Laborleiter
Head of Qualitymanagement/Deputy Laboratory Manager



This test report consists of 1 page and an appendix of 4 pages.

Re 1. Test specimen:

Six samples, each consisting of 6 identical specimens, labelled as

“11 2 057 2826 Becher Stripes - Sunflower”,
“11 2 057 2829 Becher Stripes - Jadegreen”,
“11 7 275 2813 Becher Cyan Blue Poppy”,
“11 5 053 2053 Espresso Obelix Pants (cup)”,
“11 5 053 2053 Espresso Obelix Pants (saucer)”,
“11 5 053 2833 Espresso Love Explodes (cup)” and
“11 5 053 2833 Espresso Love Explodes (saucer)”.



Figure 1: Cup “11 2 057 2826 Becher Stripes - Sunflower”



Figure 2: “11 2 057 2829 Becher Stripes – Jadegreen”



Figure 3: “11 7 275 2813 Becher Cyan Blue Poppy”



Figure 4: “11 5 053 2053 Espresso Obelix Pants (cup)”

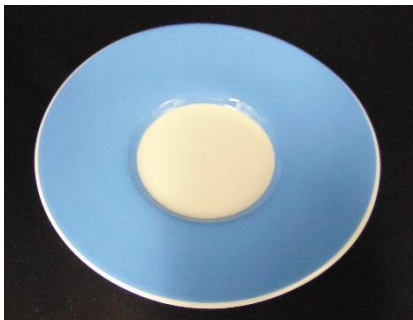


Figure 5: “11 5 053 2053 Espresso Obelix Pants (saucer)”



Figure 6: “11 5 053 2833 Espresso Love Explodes (cup)”



Figure 7: “11 5 053 2833 Espresso Love Explodes (saucer)”

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. For the lip and rim area test the specimens were covered partially with paraffin after cleaning.

Re 6. Results:

Table 1: Lip and rim area testing

Testing Parameter	"11 2 057 2826 Becher Stripes - Sunflower"						
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	Mean
Cadmium [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium [mg/object]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead [mg/object]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Volume [L]*	0.500	0.500	0.500	0.500	0.500	0.500	0.500

* storage volume

Table 2: Lip and rim area testing

Testing Parameter	"11 2 057 2829 Becher Stripes - Jadegreen"						
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	Mean
Cadmium [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium [mg/object]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead [mg/object]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Volume [L]*	0.500	0.500	0.500	0.500	0.500	0.500	0.500

* storage volume

Table 3: Lip and rim area testing

Testing Parameter	"11 7 275 2813 Becher Cyan Blue Poppy"						
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	Mean
Cadmium [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead [mg/L]	0.308	0.319	0.325	0.317	0.281	0.330	0.314
Cadmium [mg/object]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead [mg/object]	0.154	0.160	0.163	0.159	0.141	0.165	0.157
Volume [L]*	0.500	0.500	0.500	0.500	0.500	0.500	0.500

* storage volume

Table 4: Lip and rim area testing

Testing Parameter	"11 5 053 2053 Espresso Obelix Pants (cup)"						
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	Mean
Cadmium [mg/L]	0.014	0.027	0.014	0.018	0.021	0.014	0.018
Lead [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium [mg/object]	0.002	0.003	0.002	0.002	0.003	0.002	0.002
Lead [mg/object]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Volume [L]*	0.120	0.120	0.120	0.120	0.120	0.120	0.120

* storage volume

Table 5: Flatware testing

Testing Parameter	"11 5 053 2053 Espresso Obelix Pants (saucer)"						
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	Mean
Cadmium [mg/L]	0.002	0.002	0.002	0.002	0.001	0.003	0.002
Lead [mg/L]	0.003	0.004	0.004	0.004	0.003	0.004	0.004
Cadmium [mg/dm ²]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead [mg/dm ²]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Volume [L]*	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Area [dm ²]	0.849	0.849	0.849	0.849	0.849	0.849	0.849

* storage volume

Table 6: Lip and rim area testing

Testing Parameter	"11 5 053 2833 Espresso Love Explodes (cup)"						
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	Mean
Cadmium [mg/L]	0.005	0.008	0.006	0.009	0.006	0.006	0.007
Lead [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium [mg/object]	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	---
Lead [mg/object]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Volume [L]*	0.120	0.120	0.120	0.120	0.120	0.120	0.120

* storage volume

Table 7: Flatware testing

Testing Parameter	"11 5 053 2833 Espresso Love Explodes (saucer)"						
	N° 1	N° 2	N° 3	N° 4	N° 5	N° 6	Mean
Cadmium [mg/L]	0.029	0.025	0.038	0.023	0.065	0.059	0.040
Lead [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium [mg/dm ²]	0.001	0.001	0.002	0.001	0.003	0.003	0.002
Lead [mg/dm ²]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Volume [L]*	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Area [dm ²]	0.849	0.849	0.849	0.849	0.849	0.849	0.849

* storage volume

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

LIMITS

Table 8: 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] = [ppm]	Cadmium [mg/L] = [ppm]
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 9: 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] = [ppm]	Cadmium [mg/L] = [ppm]
Flatware	3.0	0.5

Table 10: Limits for ceramic foodware according to the Californian guidelines ('proposition 65' etc.)

Ceramic foodware	Lead [mg/L] = [ppm]	Cadmium [mg/L] = [ppm]
Cups & mugs 20 mm lip and rim area	0.5	4.0

Table 11: Limits for ceramic foodware according to the Californian guidelines ('proposition 65' etc.)

Ceramic foodware	Lead [mg/L] = [ppm]	Cadmium [mg/L] = [ppm]
Flatware	0.226	1.853 *

* 'Advisory limits based upon OEHHA's (April 2018) Maximum allowable Dose Level for cadmium 4.1 µg/day (oral)' (Source: LUCIDEON Publication: Toxic Metal Release from Ceramic and Glass Tableware in Contact with Food - A Guide to Worldwide Regulations and Standards, September 2018)

Table 12: Limits for the release of lead and cadmium from ceramic foodware and glassware according to DIN 51032 (based on European directive 84/500/EEG for ceramic objects and supplementing European directive 2005/31/EG, which refers to the European regulation 1935/2004/EG)

Ceramics & glassware: Hollowware objects	Lead [mg/L]	Cadmium [mg/L]
Lip and rim area of hollow objects	2.0 [mg/object]	0.2 [mg/object]

Table 13: Limits for the release of lead and cadmium from ceramic foodware and glassware according to DIN 51032 (based on European directive 84/500/EEG for ceramic objects and supplementing European directive 2005/31/EG, which refers to the European regulation 1935/2004/EG)

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

Re 7. Testing uncertainties:

ICP-MS

Due to the acetic acid matrix as well as the low element concentrations the relative expanded (k = 2; p = 95 %) measurement uncertainties are maximum 13 %.