



Technical Report No. 68.402.17.0038.01
Dated 2017-03-31

Client: Lotus Vita Ltd. & Co KG

Address: Vogesenblick 3 79206 Breisach Germany

Attn.: Mr. Michael Wolf

Sample Description: Water purifier

Model No.: /

Sample Received Date: 2017-01-18, 2017-02-06, 2017-03-15

Test Period: From 2017-01-18 to 2017-02-22
From 2017-03-15 to 2017-03-29

Test Requested: As specified by client, to test below items as regulated by the German Food & Feed Acts LFGB (§ 30 & 31) and Regulation (EC) No.1935/2004,

1. For material: Plastics or coating
 - Overall migration test for compliance with regulation (EU) 10/2011 and it's amendment 2016/1416.
2. For material: Plastics or coating
 - Specific Migration of Heavy Metals ((Ba, Co, Cu, Fe, Li, Mn, Zn, Al) for compliance with regulation (EU) 10/2011 and it's amendment 2016/1416.
3. For material: Plastics or coating
 - Specific Migration of Primary Aromatic Amine for compliance with regulation (EU) 10/2011.
4. For material: Silicone
 - Extractable components
5. For material: Silicone / Rubber / Plastic
 - Remaining Peroxide
6. For material: Silicone / Rubber
 - Volatile Organic Matters
7. For material: Silicone / Rubber
 - Extractable Formaldehyde
8. For material: Silicone
 - Total platinum content
9. For material: Polystyrene and styrene copolymers / Acrylic
 - Volatile Organic Components

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- 10. For material: Polycarbonates (PC)
 - Specific migration of Bisphenol A
- 11. For material: Acrylonitrile copolymers
 - Specific migration of Acrylonitrile
- 12. For material: Polypropylene (PP)
 - Total Chromium, Vanadium , Zirconium and Hafnium content
- 13. Sensory test
 - With reference to DIN 10955

Conclusion: The submitted sample with test part(s) was found to **comply** with the respective requirement(s) for the tested item(s) as stated in the German Food & Feed Acts LFGB (§ 30 & 31) and Regulation (EC) No.1935/2004 (Material in contact with food regulation)

Test Result: Refer to the following page(s)

Remark: --The result relates only to the items tested.



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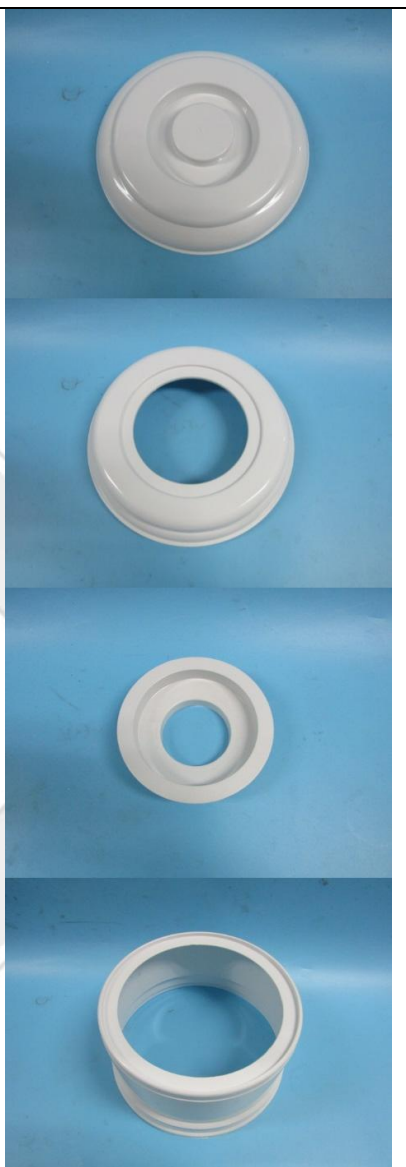

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1. TESTED SUBJECT DESCRIPTION

Sample Number	Item Name	Tested Material Description	Photo
001	SAN	Blue transparent plastic	
002	ABS	Gray plastic	

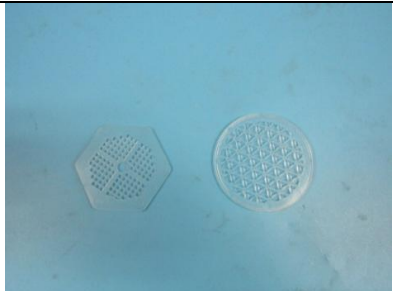

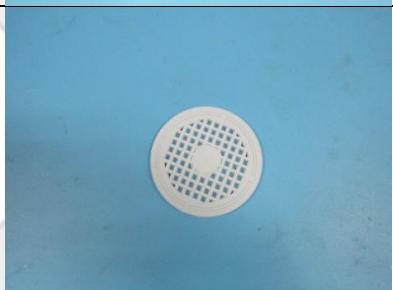

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Sample Number	Item Name	Tested Material Description	Photo
003	ABS	White plastic	
004	Silicone	White silicone	

Technical Report No. 68.402.17.0038.01
Dated 2017-03-31

Sample Number	Item Name	Tested Material Description	Photo
005	Silicone	White silicone	
006	PP	Transparent plastic	
007	ABS	White plastic	
008	PC	Blue transparent plastic	

Technical Report No. 68.402.17.0038.01
Dated 2017-03-31

Sample Number	Item Name	Tested Material Description	Photo
009	SAN	Transparent plastic	
010	SAN	Blue transparent plastic	
011	ABS	White plastic	
012	ABS	White plastic	

2. TEST RESULT

2.1 OVERALL MIGRATION TEST FOR PLASTIC

Test method: As specified in Regulation (EU) No. 10/ 2011; with reference to EN 1186:part 1, part 2, part 3, part 8, part 9 & part 14 :2002.

Simulant Used	Test Condition	Result [mg/dm ²]			Maximum Permissible Limit [mg/dm ²]
		Sample 001	Sample 002	Sample 003	
Distilled Water	40 °C for 240 hours	< 3.0	< 3.0	< 3.0	10

Simulant Used	Test Condition	Result [mg/dm ²]			Maximum Permissible Limit [mg/dm ²]
		Sample 006	Sample 007	Sample 008	
Distilled Water	40 °C for 240 hours	< 3.0	3.8	< 3.0	10

Simulant Used	Test Condition	Result [mg/dm ²]			Maximum Permissible Limit [mg/dm ²]
		Sample 009	Sample 010	Sample 011	
Distilled Water	40 °C for 240 hours	< 3.0	< 3.0	< 3.0	10

Simulant Used	Test Condition	Result [mg/dm ²]	Maximum Permissible Limit [mg/dm ²]
		Sample 012	
Distilled Water	40 °C for 240 hours	< 3.0	10

Note:

- “°C” denotes degree Celsius
- “mg/dm²” denotes milligram per square decimeter
- “<” denotes less than
- The specification was quoted from regulation (EU) 10/2011.

2.2 SPECIFIC MIGRATION OF HEAVY METALS (Ba, Co, Cu, Fe, Li, Mn, Zn, Al) TEST

Test method: As specified in Regulation (EU) No. 10/2011, the sample(s) were migrated with food simulant, followed by Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) analysis.

Testing condition and simulant: Distilled water at 40°C for 240 hour(s).

Test Item	Result [mg/kg]			Maximum Permissible Limit [mg/kg]
	Sample 001	Sample 002	Sample 003	
Barium (Ba)	<0.10	<0.10	<0.10	1
Cobalt (Co)	<0.05	<0.05	<0.05	0.05
Copper (Cu)	<0.10	<0.10	<0.10	5
Iron (Fe)	<1.00	<1.00	<1.00	48
Lithium (Li)	<0.10	<0.10	<0.10	0.6
Manganese (Mn)	<0.05	<0.05	<0.05	0.6
Zinc (Zn)	<1.00	<1.00	<1.00	5
Aluminium (Al)	0.15	0.24	0.21	1

Test Item	Result [mg/kg]			Maximum Permissible Limit [mg/kg]
	Sample 006	Sample 007	Sample 008	
Barium (Ba)	<0.10	<0.10	<0.10	1
Cobalt (Co)	<0.05	<0.05	<0.05	0.05
Copper (Cu)	<0.10	<0.10	<0.10	5
Iron (Fe)	<1.00	<1.00	<1.00	48
Lithium (Li)	<0.10	<0.10	<0.10	0.6
Manganese (Mn)	<0.05	<0.05	<0.05	0.6
Zinc (Zn)	<1.00	<1.00	<1.00	5
Aluminium (Al)	0.17	<0.05	<0.05	1

Note:

- “mg/kg” denotes milligram per kilogram foodstuff
- “<” denotes less than
- The specification was quoted from regulation (EU) 10/2011 and it’s amendment 2016/1416.

Technical Report No. 68.402.17.0038.01
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(Continued)

Testing condition and simulant: Distilled water at 40°C for 240 hour(s).

Test Item	Result [mg/kg]			Maximum Permissible Limit [mg/kg]
	Sample 009	Sample 010	Sample 011	
Barium (Ba)	<0.10	<0.10	<0.10	1
Cobalt (Co)	<0.05	<0.05	<0.05	0.05
Copper (Cu)	<0.10	<0.10	<0.10	5
Iron (Fe)	<1.00	<1.00	<1.00	48
Lithium (Li)	<0.10	<0.10	<0.10	0.6
Manganese (Mn)	<0.05	<0.05	<0.05	0.6
Zinc (Zn)	<1.00	<1.00	<1.00	5
Aluminium (Al)	<0.05	<0.05	<0.05	1

Test Item	Result [mg/kg]	Maximum Permissible Limit [mg/kg]
	Sample 012	
Barium (Ba)	<0.10	1
Cobalt (Co)	<0.05	0.05
Copper (Cu)	<0.10	5
Iron (Fe)	<1.00	48
Lithium (Li)	<0.10	0.6
Manganese (Mn)	<0.05	0.6
Zinc (Zn)	<1.00	5
Aluminium (Al)	<0.05	1

Note:

- “mg/kg” denotes milligram per kilogram foodstuff
- “<” denotes less than
- The specification was quoted from regulation (EU) 10/2011 and it's amendment 2016/1416.

2.3 SPECIFIC MIGRATION OF PRIMARY AROMATIC AMINE TEST

Test method: With reference to EN 1186-1: 2002, followed by Kunststoffe im Lebensmittelverkehr, Book 2, Teil B II, XXI. [Detection limit: 0.01 mg/kg]

Testing condition and simulant: Distilled water at 40°C for 240 hour(s).

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 001	Sample 002	
Migration of Primary Aromatic Amine	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 003	Sample 006	
Migration of Primary Aromatic Amine	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 007	Sample 008	
Migration of Primary Aromatic Amine	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 009	Sample 010	
Migration of Primary Aromatic Amine	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 011	Sample 012	
Migration of Primary Aromatic Amine	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Note:

- "mg/kg" denotes milligram per kilogram foodstuff
- "<" denotes less than
- The specification was quoted from regulation (EU) 10/2011.

2.4 EXTRACTABLE COMPONENTS TEST

Test method: With reference to Kunststoffe im Lebensmittelverkehr ,Book 2, Teil B II, XV.

Simulant Used	Test Condition	Result [%]		Maximum Permissible Limit [%]
		Sample 004	Sample 005	
Distilled water	Reflux for 5 hours	< 0.10	< 0.10	0.5
3% Acetic Acid	Reflux for 5 hours	< 0.10	< 0.10	0.5
10% Ethanol	Reflux for 5 hours	< 0.10	< 0.10	0.5

Note :

- % denotes percentage by weight
- "<" denotes less than
- The specification was quoted from Recommendation of the BfR "Kunststoffe im Lebensmittelverkehr" Part XV "Silicone"

2.5 REMAINING PEROXIDE TEST

Test method : With reference to 58th Communication on the testing of plastics, Bundesgesundheitsbl. 40 (1997) 412.

Test Item	Result		Maximum Permissible Limit
	Sample 004	Sample 005	
Remaining Peroxide	Absent	Absent	Absent

Note:

- The specification was quoted from Recommendation of the BfR "Kunststoffe im Lebensmittelverkehr Part XV and Part VI.

2.6 VOLATILE ORGANIC MATTER TEST

Test Method: With reference to 61st Communication on testing of plastics in Bundesgesundheitsbl 46 (2003) 362.

Test Item	Test Condition	Result [%]		Maximum Permissible Limit [%]
		Sample 004	Sample 005	
Volatile Organic Matter	40 °C for 240 hours	< 0.01	< 0.01	0.5

Note:

- "°C" denotes degree Celsius
- "%" denotes percentage by weight
- "<" denotes less than
- The specification was quoted from Recommendation of the BfR "Kunststoffe im Lebensmittelverkehr Part XV "Silicones"

2.7 EXTRACTABLE FORMALDEHYDE TEST

Test method: With reference to 61st Communication on testing of plastics in Bundesgesundheitsbl 46 (2003) 362, the sample(s) were extracted with food simulant, followed by Ultraviolet-visible spectroscopy (UV-Vis) analysis.

Testing condition and simulant: Distilled water at 40°C for 240 hour(s)

Test Item	Result [mg/L]		Maximum Permissible Limit [mg/L]
	Sample 004	Sample 005	
Extractable Formaldehyde	< 0.3	< 0.3	3

Note:

- “mg/L” denotes milligram per Litre
- “<” denotes less than
- The specification was quoted from Recommendation of the BfR “Kunststoffe im Lebensmittelverkehr Part XV and Part XXI.

2.8 TOTAL PLATINUM CONTENT TEST

Test method: Microwave digestion, followed by Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) analysis.

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 004	Sample 005	
Platinum	< 20.0	< 20.0	50 (other than coating paper, plastic film)

Note:

- “mg/kg” denotes milligram per kilogram
- “<” denotes less than
- The specification was quoted from Recommendation of the BfR “Kunststoffe im Lebensmittelverkehr Part XV “Silicone”

2.9 VOLATILE ORGANIC COMPONENTS TEST

Test Method: With reference to 19th Communication on the testing of plastics, Bundesgesundheitsbl. 14 (1971) 265.

Test Item	Result [mg/dm ²]			Maximum Permissible Limit [mg/dm ²]
	Sample 001	Sample 002	Sample 003	
Volatile Organic Components	10.2	4.6	3.6	15

Test Item	Result [mg/dm ²]			Maximum Permissible Limit [mg/dm ²]
	Sample 007	Sample 009	Sample 010	
Volatile Organic Components	4.0	10.1	6.1	15

Test Item	Result [mg/dm ²]		Maximum Permissible Limit [mg/dm ²]
	Sample 011	Sample 012	
Volatile Organic Components	6.6	1.8	15

Note:

- mg/dm² denotes milligram per square decimeter
- The specification was quoted from Recommendation of the BfR "Kunststoffe im Lebensmittelverkehr Part VI "Styrene Copolymers and Graft Polymers, and Mixtures of Polystyrene with other Polymers"

2.10 SPECIFIC MIGRATION OF BISPHENOL A TEST

Test method: As specified in Regulation (EU) No. 10/2011, the sample(s) were migrated with food simulant, followed by Liquid Chromatography with Tandem Mass Spectrometry Detection (LC-MS/MS) analysis.

Testing condition and simulant: Distilled water at 40°C for 240 hour(s).

Test Item	Result [mg/kg]	Maximum Permissible Limit [mg/kg]
	Sample 008	
Migration of Bisphenol A	< 0.05	0.6

Note:

- "mg/kg" denotes milligram per kilogram foodstuff.
- "<" denotes less than
- The specification was quoted from regulation (EU) 10/2011.

2.11 SPECIFIC MIGRATION OF ACRYLONITRILE

Test method: As specified in Regulation (EU) No. 10/2011, the sample(s) were migrated with food simulant, followed by Gas Chromatography/Mass Spectrometry (GC-MS) analysis.

Testing condition and simulant: Distilled water at 40°C for 240 hour(s).

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 001	Sample 002	
Migration of Acrylonitrile	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 003	Sample 007	
Migration of Acrylonitrile	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 009	Sample 010	
Migration of Acrylonitrile	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Test Item	Result [mg/kg]		Maximum Permissible Limit [mg/kg]
	Sample 011	Sample 012	
Migration of Acrylonitrile	< 0.01	< 0.01	Not Detected (< 0.01 mg/kg)

Note:

- “°C” denotes degree Celsius
- “mg/kg” denotes milligram per kilogram foodstuff.
- “<” denotes less than
- The specification was quoted from Regulation (EU) No. 10/2011

2.12 TOTAL CHROMIUM, VANADIUM ZIRCONIUM AND HAFNIUM CONTENT TEST

Test method: Microwave digestion, followed by Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) analysis.

Test Item	Result [mg/kg]	Maximum Permissible Limit [mg/kg]
	Sample 006	
Chromium (Cr)	< 10	10
Vanadium (V)	< 15	20
Zirconium (Zr)	< 15	100
Hafnium (Hf)	< 15	100

Note:

- “mg/kg” denotes miligram per kilogram
- “<” denotes less than
- The specification was quoted from Recommendation of the BfR “Kunststoffe im Lebensmittelverkehr” Part VII “Polypropylene”.



2.13 SENSORY TEST

Test method: With reference to DIN 10955: 2004. The submitted sample was treated with food stimulant. After this treatment, treated water was examined by panels with regard to any divergence in smell and taste.

Testing condition and simulant: Distilled water at 40°C for 240 hour(s).

Test Item	Grading Result		Recommended Level
	Sample 001+006+008	Sample 002+003+007 +011+012	
Transfer of Smell	1	1	< 2.5
Transfer of Taste	1	1	< 2.5

Test Item	Grading Result		Recommended Level
	Sample 004+005	Sample 009+010	
Transfer of Smell	1	1	< 2.5
Transfer of Taste	1	1	< 2.5

Note:

- Explanation for grading are listed as below:
 Grading 0: No perceptible taste/smell deviation
 Grading 1: Just perceptible taste/smell deviation
 Grading 2: Weak taste/smell deviation
 Grading 3: Clear taste/smell deviation
 Grading 4: Strong taste/smell deviation

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