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SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION
Sensory Test (Odour and Taste) for Materials in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB	PASS
Overall Migration Test for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of Heavy Metals for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of Primary Aromatic Amine for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments, Regulation (EU) No 284/2011	PASS
Specific Migration of Caprolactam for Plastic Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of Acrylonitrile for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of 1,3-Butadiene for Plastic Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Peroxides Value for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Specific Migration of Formaldehyde for Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of Phenolic Substance for Temperature Resistant Coating in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Volatile Organic Matter Content for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
1,3-Butadiene Content for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments	PASS
Extractable Matter Content for Silicon in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Extractable Lead and Cadmium in Glass Wares – 84/500/EEC and Its Amendments	PASS
Extractable Cobalt in Glass Wares	PASS
Total Chromium, Hafnium, Vanadium and Zirconium Content for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Migration of Heavy Metals Contents for Metal in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB	PASS

Note: The tested part of the sample was specified by client.
The test conclusion was given based on the results of tested part.
Selected test items as requested by applicants.

Sample Description Assigned by Laboratory:

Test Item	Description	Client Claimed Material
1	Complete product	-
2	Complete product	-
3	Black plastic	PA66+33%GF
4	Beige plastic	PA66+33%GF
5	Black plastic	PPS
6	White plastic	PBT+30%GF
7	Silvery metal	SUS304
8	Black silicone ring (Sample Receiving Date: 2022.11.16)	Silicone
9	Red silicone ring (Sample Receiving Date: 2022.11.16)	Silicone
10	White silicone tube (Sample Receiving Date: 2022.11.16)	Silicone
11	White plastic tube	Teflon
12	Copper colored metal ring	Copper
13	Transparent plastic water tank	AS
14	Black plastic lid	ABS
15	Transparent inner glass fiber silicone tube (Sample Receiving Date: 2022.11.16)	Silicone
16	Transparent glass ball	Glass
17	Beige plastic rotor	PP
18	steam boiler	-
19	Coffee boiler	-
20	Water pump	-
21	Three way magnetic valve	-
22	Black silicone ring (Sample Receiving Date: 2022.12.13)	Silicone
23	Red silicone ring (Sample Receiving Date: 2022.12.07)	Silicone
24	White silicone tube (Sample Receiving Date: 2022.12.07)	Silicone
25	Transparent inner glass fiber silicone tube (Sample Receiving Date: 2022.12.14)	Silicone

TEST RESULT

Sensory Test (Odour and Taste) for Materials in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB

Parameter	Result		Maximum Allowable Limit
	1	2	
Odour transfer into foodstuff through simulant, Mineral water	0	0	2.5 Scale
Taste transfer into foodstuff through simulant, Mineral water	0	0	2.5 Scale
Conclusion	PASS	PASS	-

Note: Scale: 0 = no perceptible off-odour (or taste transfer);
1 = off-odour (or taste transfer) just perceptible (but still difficult to define);
2 = slight off-odour (or taste transfer);
3 = distinct off-odour (or taste transfer);
4 = strong off-odour (or taste transfer)

Method: DIN 10955: 2004-06

Overall Migration Test for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 1 h at 100 °C (10% Ethanol)

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		3				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	2.4			-	-
Volume of stimulant used	mL	240			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		4				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.72			-	-
Volume of stimulant used	mL	72			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-



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Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		11				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.6			-	-
Volume of stimulant used	mL	60			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Test Condition: 2 h at 70 °C (10% Ethanol)

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		5				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	1.92			-	-
Volume of stimulant used	mL	192			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		6				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.6			-	-
Volume of stimulant used	mL	60			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		14				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	1.0			-	-
Volume of stimulant used	mL	100			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		17				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	1.0			-	-
Volume of stimulant used	mL	100			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-



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Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		20				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	2.82			-	-
Volume of stimulant used	mL	282			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		21				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.72			-	-
Volume of stimulant used	mL	72			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Test Condition: 2 h at 70 °C (10% Ethanol)
2 h at 70 °C (50% Ethanol)

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		13				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.6			-	-
Volume of stimulant used	mL	60			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
50% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Note: "<" = less than
mg/dm² = milligram per square decimeter

Method: EN 1186-1: 2002;

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
2) For article intended for repeated use, the migration tests are carried out three times on the same test sample.
3) Test condition and simulant were specified by client



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Specific Migration of Heavy Metals for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 1 h at 100 °C (3% Acetic acid)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			3			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	2.4			-
Volume of stimulant used	-	mL	400			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			4			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.72			-
Volume of stimulant used	-	mL	120			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			11			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Test Condition: 3 d at 40 °C (3% Acetic acid)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			5			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	1.92			-
Volume of stimulant used	-	mL	320			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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			6			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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			13			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			14			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			17			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	0.2	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-

Note: "<" = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and analysis by Inductively Coupled Plasma Mass Spectrometers (ICP-MS).

Remark: 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.

2) For article intended for repeated use, the migration tests are carried out three times on the same test sample.

3) Due to the fact that SML for As, Cr, Pb, Hg is specified as not detectable meaning < 0.01 mg/kg and SML for Cd is specified as not detectable meaning < 0.002 mg/kg analysis and assessment has to be performed using the 1st migrate in any case no matter whether article/materials is intended for single or repeated use.

4) Test condition and simulant were specified by client



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**Specific Migration of Primary Aromatic Amine for Plastic Materials in Contact with Foodstuffs –
Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its
Amendments, Regulation (EU) No 284/2011**

Test Condition: 1 h at 100 °C (3% Acetic acid)

Primary Aromatic Amines (PAAs)

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		3			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylydine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylydine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		4			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylidine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylidine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		11			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylidine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylidine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-



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Primary Aromatic Amines (PAAs)

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		3			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		4			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		11			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Test Condition: 3 d at 40 °C (3% Acetic acid)

Primary Aromatic Amines (PAAs)

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		14			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylydine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylydine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		20			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylydine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylydine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		21			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylidine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylidine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-



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Primary Aromatic Amines (PAAs)

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		14			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		20			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		21			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004, LC-MS/ LC-MS/MS analysis.

Remark: 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.

2) PAA listed in entry 43 to Appendix 8 of Annex XVII to Regulation (EC) No 1907/2006 and 1,3-phenylenediamine are specified as not detectable meaning < 0.002 mg/kg, assessment has to be performed using the 1st migrate in any case no matter whether article/materials is intended for single or repeated use.

3) Test condition and simulant were specified by client

Specific Migration of Caprolactam for Plastic Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 1 h at 100 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3 rd)
			3			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	2.4			-
Volume of stimulant used	-	mL	400			-
Caprolactam	10% Ethanol	mg/kg	<5	<5	<5	15
Conclusion	-	-	PASS			-

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3 rd)
			4			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.72			-
Volume of stimulant used	-	mL	120			-
Caprolactam	10% Ethanol	mg/kg	<5	<5	<5	15
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and prCEN/TS 13130-16:2004.

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.

2) For article intended for repeated use, the migration tests are carried out three times on the same test sample.

3) Test condition and simulant were specified by client



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Specific Migration of Acrylonitrile for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 3 d at 40 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(1 st)
			13			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
Acrylonitrile	10% Ethanol	mg/kg	<0.01	<0.01	<0.01	Not Detected
Conclusion	-	-	PASS			-

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(1 st)
			14			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
Acrylonitrile	10% Ethanol	mg/kg	<0.01	<0.01	<0.01	Not Detected
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and EN 13130-3:2004.

Remark: 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.

2) Due to the fact that SML for Acrylonitrile is specified as not detectable meaning < 0.01 mg/kg, assessment has to be performed using the 1st migrate in any case no matter whether article/materials is intended for single or repeated use.

3) Test condition and simulant were specified by client

Specific Migration of 1,3-Butadiene for Plastic Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 3 d at 40 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(1 st)
			14			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
1,3-Butadiene	10% Ethanol	mg/kg	<0.01	<0.01	<0.01	Not Detected
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and EN 13130-15:2005.

Remark: 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.

2) Due to the fact that SML for Butadiene is specified as not detectable meaning < 0.01 mg/kg, assessment has to be performed using the 1st migrate in any case no matter whether article/materials is intended for single or repeated use.

3) Test condition and simulant were specified by client

Peroxides Value for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Parameter	Result					Maximum Allowable Limit
	3	4	8	9	10	
Peroxides	Absent	Absent	Absent	Absent	Absent	Absent
Conclusion	PASS	PASS	PASS	PASS	PASS	-

Parameter	Result				Maximum Allowable Limit
	13	14	15	17	
Peroxides	Absent	Absent	Absent	Absent	Absent
Conclusion	PASS	PASS	PASS	PASS	-

Method: European Pharmacopeia 5.0, Ph. Eur. Method 2.5.5.

Remark: The limit refers to BfR Recommendation XV,VI.

Specific Migration of Formaldehyde for Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 1 h at 100 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3 rd)
			11			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
Formaldehyde	10% Ethanol	mg/kg	<1	<1	<1	15
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and CEN/TS 13130-23:2005.

- Remark:
- 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.
 - 2) For article intended for repeated use, the migration tests are carried out three times on the same test sample.
 - 3) Test condition and simulant were specified by client

Specific Migration of Phenolic Substance for Temperature Resistant Coating in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Test Condition: 1 h at 100 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3 rd)
			11			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
Phenolic Substance	10% Ethanol	mg/dm ²	<0.05	<0.05	<0.05	0.05
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/dm² = milligram per square decimeter

Method: Food simulants extraction and analysis by Liquid Chromatography (LC).

- Remark:
- 1) The limit refers to BfR Recommendation LI.
 - 2) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
 - 3) For article intended for repeated use, the migration tests are carried out three times on the same test sample.
 - 4) Test condition and simulant were specified by client

Volatile Organic Matter Content for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Test Condition: 24 h at 90 °C

Parameter	Unit	Result		Maximum Allowable Limit
		13	14	
Volatile Organic Matter	mg/dm ²	5.1	12.3	15
Conclusion	-	PASS	PASS	-

Test Condition: 4 h at 200 °C

Parameter	Unit	Result				Maximum Allowable Limit
		22	23	24	25	
Volatile Organic Matter	% (w/w)	0.28	0.19	0.27	0.23	0.5
Conclusion	-	PASS	PASS	PASS	PASS	-

Note: “<” = less than
 mg/dm² = milligram per square decimeter
 % w/w = percent weight by weight

Method: Gravimetric method.

Remark: The limit refers to BfR Recommendation VI, XV.

1,3-Butadiene Content for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments

Parameter	Unit	Result	Maximum Allowable Limit
		14	
1,3-Butadiene	mg/kg	0.8	1
Conclusion	-	PASS	-

Note: “<” = less than
 mg/kg = milligram per kilogram

Method: EN 13130-4: 2004

Extractable Matter Content for Silicon in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Parameter	Unit	Result				Maximum Allowable Limit
		8	9	10	15	
Extractable Matter	% w/w	<0.05	<0.05	<0.05	<0.05	0.5
Conclusion	-	PASS	PASS	PASS	PASS	-

Note: “<” = less than
 % w/w = percent weight by weight

Method: Gravimetric method after reflux for 5 hours with water.

Remark: The limit refers to BfR Recommendation XV.

Extractable Lead and Cadmium in Glass Wares – 84/500/EEC and Its Amendments

Tested Item : 16
Category : 2
Internal Depth (mm) : 4
Surface Area (dm²) : 0.6

Unit	Leaching Volume (mL)	Result (mg/L)	
		Extractable Lead (Pb)	Extractable Cadmium (Cd)
1	100	<0.05	<0.01
2	100	<0.05	<0.01
3	100	<0.05	<0.01
4	100	<0.05	<0.01
Average	-	<0.05	<0.01
Conclusion	-	PASS	PASS

Note: “<” = less than
mm = millimetre
mL = milliliter
dm² = square decimeter
mg/dm² = milligrams per square decimeter
mg/L = milligrams per liter

Method: EN 1388-2:1995.

Remark: Category 1 - Articles which cannot be filled and articles which can be filled, the internal depth of which, measured from the lowest point to the horizontal plane passing through the upper rim, does not exceed 25 mm.
Category 2 - Articles, not in categories 1 or 3, which can be filled.
Category 3 - Packaging and storage vessels having a capacity of more than 3 L and cooking ware.

Limit of Extractable Lead and Cadmium in Glass Wares listed in below table.

Category	Unit	Maximum Allowable Limit	
		Lead	Cadmium
1	mg/dm ²	0.8	0.07
2	mg/L	4.0	0.3
3	mg/L	1.5	0.1

Extractable Cobalt in Glass Wares

Tested Item : 16
Category : 2
Internal Depth (mm) : 4
Surface Area (dm²) : 0.6

Unit	Leaching Volume (mL)	Result (mg/L)
1	100	<0.01
2	100	<0.01
3	100	<0.01
4	100	<0.01
Average	-	<0.01
Conclusion	-	PASS

Note: “<” = less than
mm = millimetre
mL = milliliter
dm² = square decimeter
mg/dm² = milligrams per square decimeter
mg/L = milligrams per liter

Method: EN 1388-2:1995 modified.

Remark: Category 1 - Articles which cannot be filled and articles which can be filled, the internal depth of which, measured from the lowest point to the horizontal plane passing through the upper rim, does not exceed 25 mm.
Category 2 - Articles, not in categories 1 or 3, which can be filled.
Category 3 - Packaging and storage vessels having a capacity of more than 3 L and cooking ware.

The limit refers to “A study of release of cobalt from articles with food contact”, Lebensmittelchemie 61, 58 (2007), and listed in below table.

Category	Unit	Maximum Allowable Limit
		Cobalt
1	mg/dm ²	0.1
2	mg/L	0.01
3	mg/L	0.1

Total Chromium, Hafnium, Vanadium and Zirconium Content for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Parameter	Unit	Result	Maximum Allowable Limit
		17	
Total Chromium (Cr)	mg/kg	<2	10
Total Hafnium (Hf)	mg/kg	<10	100
Total Vanadium (V)	mg/kg	<2	20
Total Zirconium (Zr)	mg/kg	<10	100
Conclusion	-	PASS	-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: Acid digestion and analysis by Inductively Coupled Argon Plasma Spectrometer (ICP).

Remark: The limit refers to BfR Recommendation VII.

Migration of Heavy Metals Contents for Metal in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB

Test Condition: Artificial tap water: 1 h at 100 °C

Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		7			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[a]	
Envelope volume	cm ³	125	125	-	-
Volume of stimulant used	mL	125	125	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	<0.02	<0.02	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-



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Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		7	
		3rd Migrate	
Envelope volume	cm ³	125	-
Volume of stimulant used	mL	125	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-



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Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		18			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[a]	
Filling volume	cm ³	3.6	3.6	-	-
Volume of stimulant used	mL	2.4	2.4	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	<0.02	<0.02	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-



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Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		18	
		3rd Migrate	
Filling volume	cm ³	3.6	-
Volume of stimulant used	mL	2.4	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-



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Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		19			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[a]	
Filling volume	cm ³	4.8	4.8	-	-
Volume of stimulant used	mL	3.2	3.2	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	<0.02	<0.02	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-



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Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		19	
		3rd Migrate	
Filling volume	cm ³	4.8	-
Volume of stimulant used	mL	3.2	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-



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Test Condition: Artificial tap water: 3 d at 40 °C

Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		12			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[a]	
Envelope volume	cm ³	125	125	-	-
Volume of stimulant used	mL	125	125	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	<0.02	<0.02	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-



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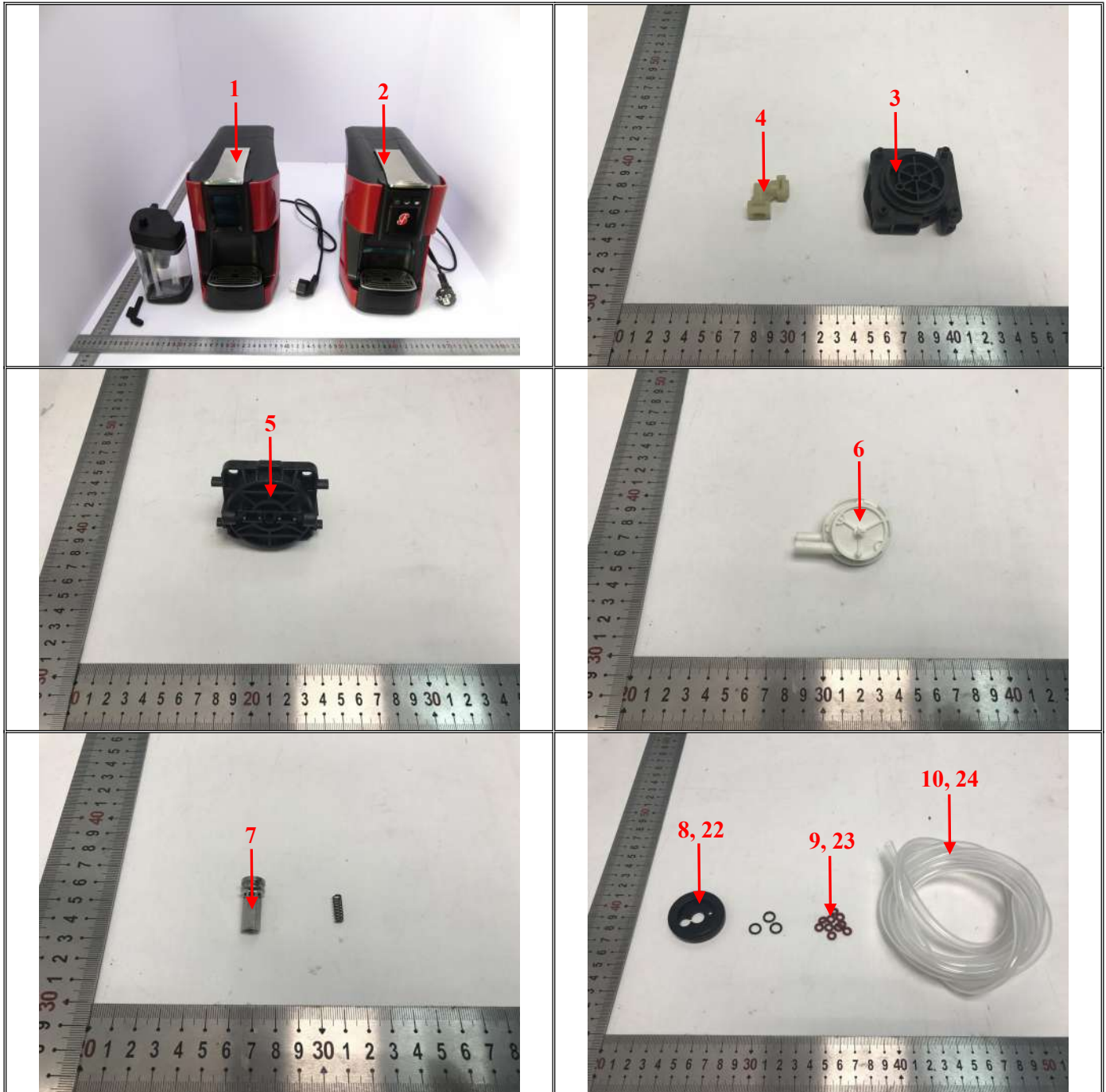
Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		12	
		3rd Migrate	
Envelope volume	cm ³	125	-
Volume of stimulant used	mL	125	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: With reference to Metals and Alloys used in Food Contact Materials and articles - A Practical Guide to Manufacturers and Regulators (2013 1st Edition) published by European Directorate for the Quality of Medicines and HealthCare (EDQM), Chapter 3.

Remark: 1) ^[a] denotes as this (these) maximum specific release limit(s) was (were) referenced from Metals and Alloys used in Food Contact Materials and articles - A Practical Guide to Manufacturers and Regulators (2013 1st Edition) published by European Directorate for the Quality of Medicines and HealthCare (EDQM), Chapter 1, Article 4, Tables 1 and 2.
2) Appropriate test condition(s) was (were) selected according to Guidelines on Testing Conditions for Articles in Contact with Foodstuffs (With a Focus on Kitchenware) (2009 1st Edition) published by European Commission Joint Research Center (JRC).
3) Artificial tap water was prepared according to German Standard DIN 10531: 2011-06.
4) ^[b] denotes as the sum of the results of the first and second migrates should not be exceed seven times the SRL

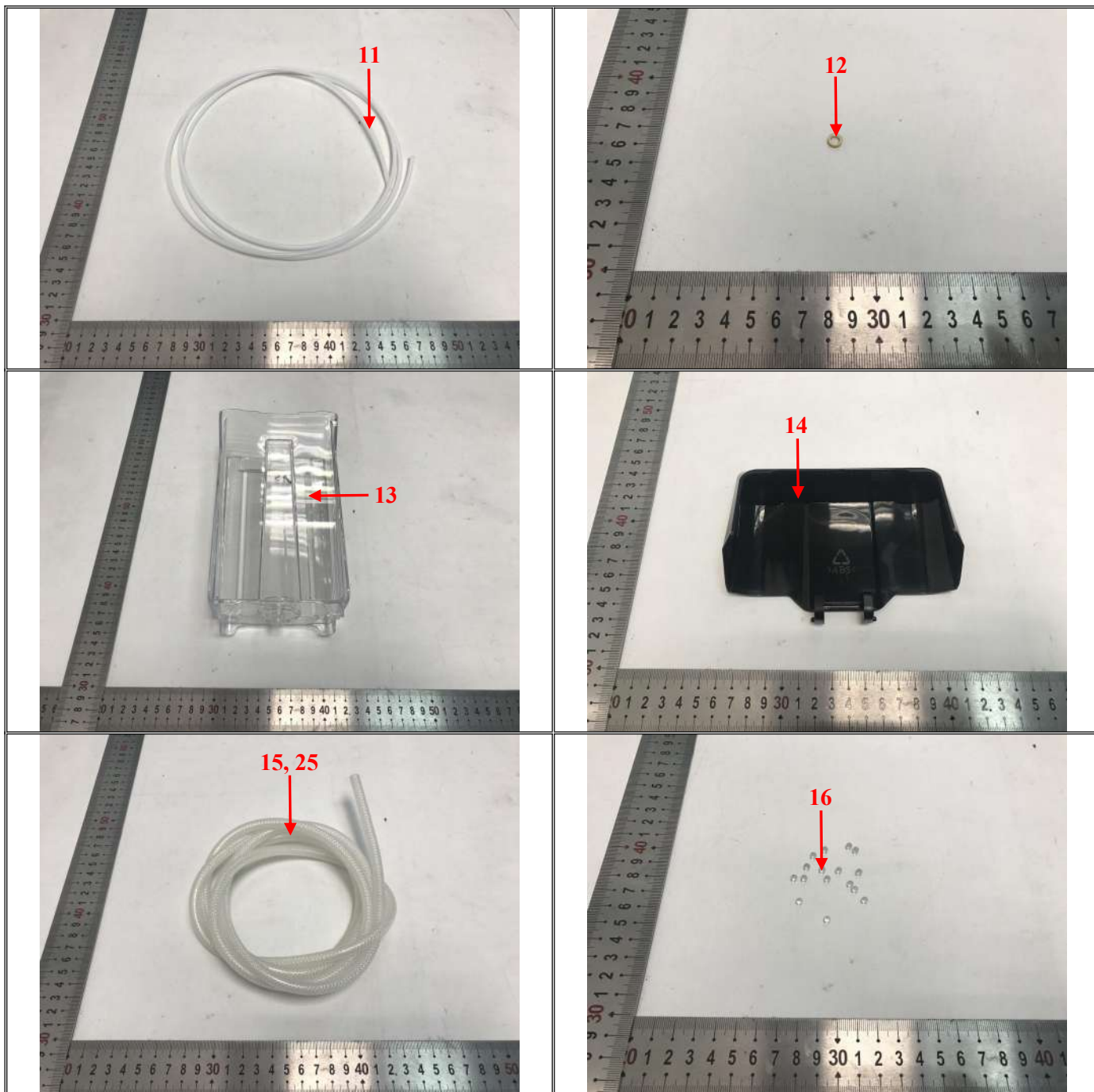
SAMPLE REFERENCE PHOTO:





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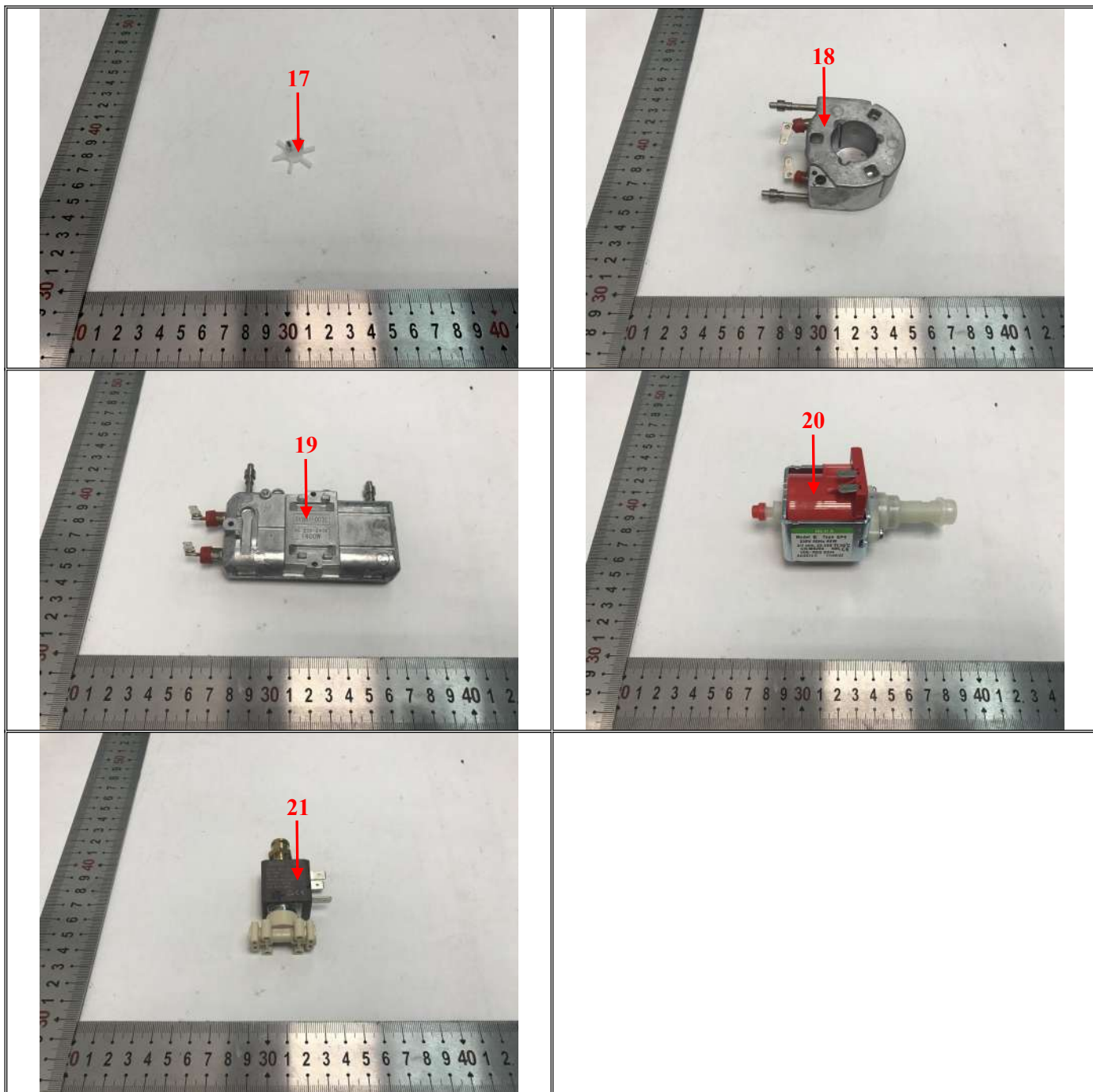
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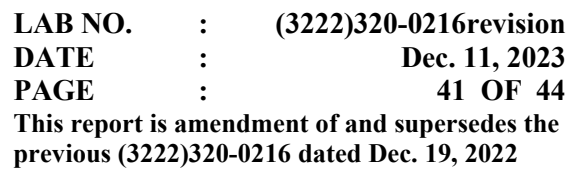




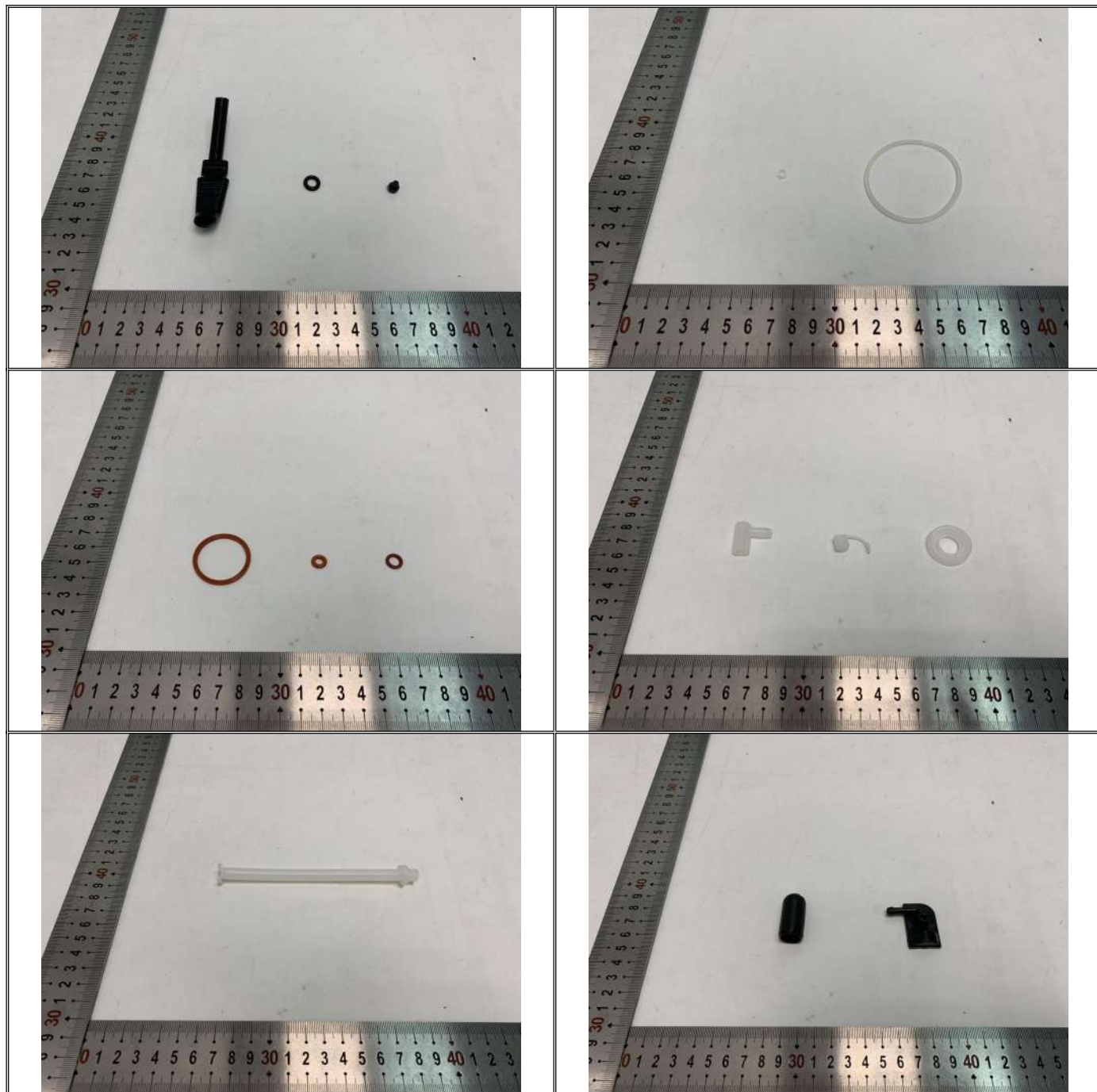
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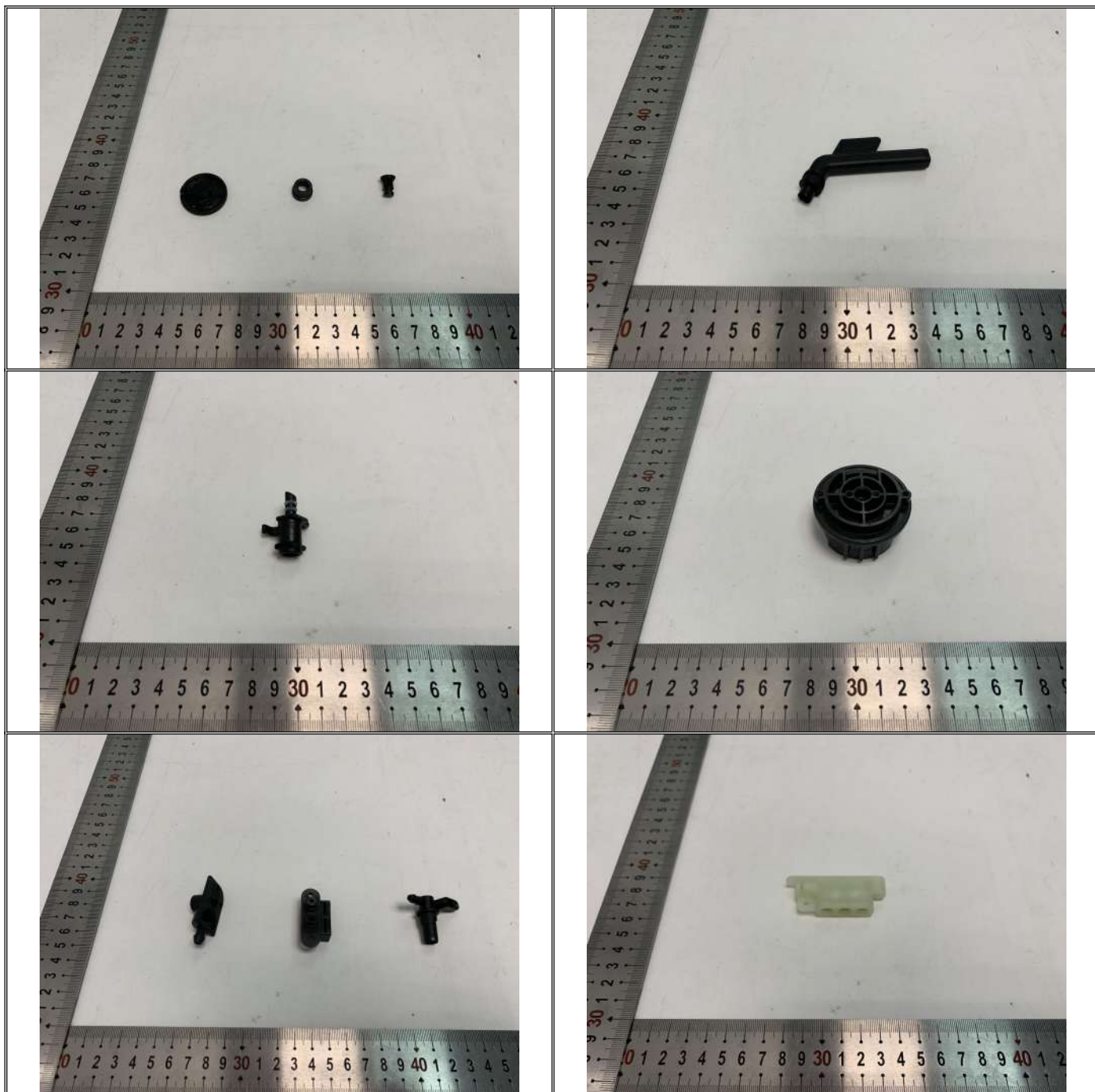
Untested sample which are by client's declaration made of same material as tested one





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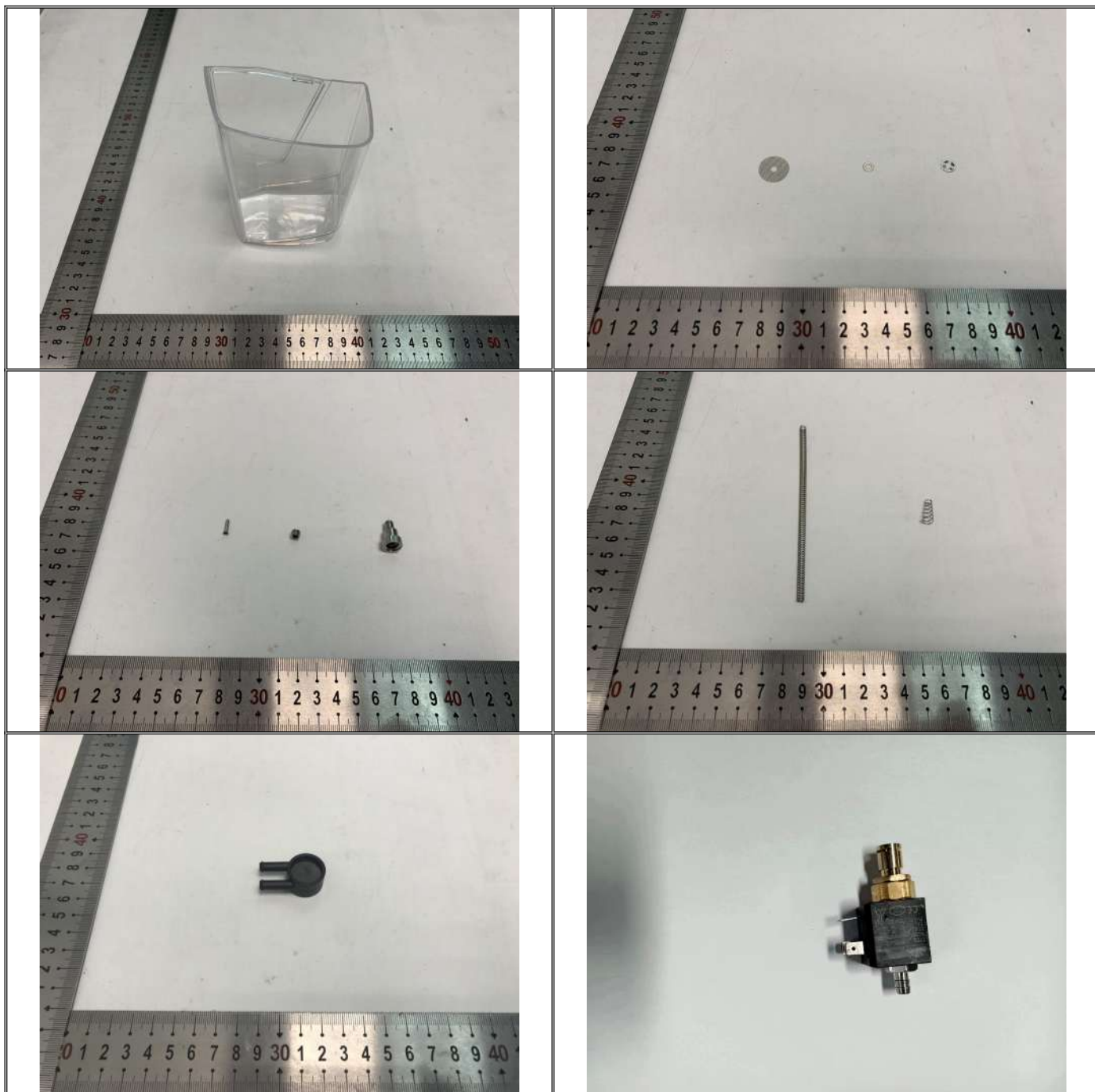
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END

Dichiarazione di Conformità



Ningbo SEAVER Electric Appliance CO., Ltd.

N° C5-2 Fareast Industrial Park, Yuyao, Ningbo City, China 315400

Dichiariamo, sotto la nostra responsabilità, che la Macchina da Caffè S.12 è conforme alle seguenti direttive:

- 2006/95/CE Direttiva bassa tensione.
- 2004/108/CE Direttiva Compatibilità Elettromagnetica.
- 2009/125/CE Direttiva ErP.

L'apparecchio è conforme alle normative descritte nei seguenti documenti:

Rif. No.	Titolo	Edizione/data
EN 60335-1	Elettrodomestici e similari apparecchi elettrici. Sicurezza.	2010; 2012 + A11: 2014
EN 60335-2-15	Particolari requisiti per apparecchiature che scaldano liquidi.	2002+ A1:2005 + A2:2008 + A11:2012
EN 62233	Metodi di valutazione dei campi elettromagnetici di elettrodomestici e di apparecchi similari nei confronti dell'esposizione umana.	2008

**Ningbo SEAVER Electric Appliance
CO., Ltd.**

N° C5-2 Fareast Industrial Park,
Yuyao, Ningbo City, China 315400

Importato da:

ESSSE CAFFE' SPA, Via Carpanelli 18/a, 40011 Anzola Dell'Emilia, (BO), Italy

Data: 20 Luglio 2015

宁波西文电器有限公司
NINGBO SEAVER ELECTRIC APPLIANCE CO., LTD.

General Manager: 汪天平



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TEST REPORT

LAB NO. : (3222)320-0216revision
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Applicant:

ESSSE CAFFÈ SPA

VIA CARPANELLI, 18/A 40011 ANZOLA DELL' EMILIA BOLOGNA / ITALY

Date of Submission: 2022-11-16, 2022-12-07, 2022-12-13 and 2022-12-14

Test Period: 2022-11-16 to 2022-12-16

Sample Description:	Espresso coffee maker		
Sample Status:	Intact		
Manufacturer:	Zhejiang SEAYER Intelligent Technology CO., Ltd. Building 11, Digital economy industrial park, No. 68 Yuhai East Road Hangzhou Bay New Zone Ningbo Zhejiang China	Buyer:	/
Style No.(s):	1 S.20 MILK, 2 S.20 ST 3 ESSSE CAFFÈ S.12ST	PO No.:	/
Country of Origin:	/	Country of Destination:	/
Color:	/	Vendor:	/

Overall Conclusion: The sample(s) **MEET** the respective requirements for the below tested items as stated in German § 30 and 31 LFGB (Food and Feed Code) and Regulation (EC) No. 1935/2004 for materials in contact with foodstuffs.

Test Item(s): Details see attached page(s).

REMARK

If there are questions or concerns on this report, please contact the following persons:

Customer service

Ms.Lulu Zhang/Ms. Ashe Xi
(0574) 87091319/(0574) 87091115
lulu.b.zhang@bureauveritas.com/ashe.xi@bureauveritas.com

BUREAU VERITAS TESTING TECHNICAL SERVICE (ZHEJIANG) CO.,LTD

Jane Ye

Jane Ye
TECHNICAL MANAGER

PREPARED BY : Jessie

Bureau Veritas Testing Technical Service
(Zhejiang) Co., Ltd
1F west of east, 7F east, 8F Building B,
No.66 Qingyi Road, Ningbo, Zhejiang, China
Tel:86-574-87091333, Fax:86-574-87971038
website:cps.bureauveritas.com

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION
Sensory Test (Odour and Taste) for Materials in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB	PASS
Overall Migration Test for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of Heavy Metals for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of Primary Aromatic Amine for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments, Regulation (EU) No 284/2011	PASS
Specific Migration of Caprolactam for Plastic Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of Acrylonitrile for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of 1,3-Butadiene for Plastic Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Peroxides Value for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Specific Migration of Formaldehyde for Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments	PASS
Specific Migration of Phenolic Substance for Temperature Resistant Coating in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Volatile Organic Matter Content for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
1,3-Butadiene Content for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments	PASS
Extractable Matter Content for Silicon in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Extractable Lead and Cadmium in Glass Wares – 84/500/EEC and Its Amendments	PASS
Extractable Cobalt in Glass Wares	PASS
Total Chromium, Hafnium, Vanadium and Zirconium Content for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Migration of Heavy Metals Contents for Metal in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB	PASS

Note: The tested part of the sample was specified by client.
The test conclusion was given based on the results of tested part.
Selected test items as requested by applicants.



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Sample Description Assigned by Laboratory:

Test Item	Description	Client Claimed Material
1	Complete product	-
2	Complete product	-
3	Black plastic	PA66+33%GF
4	Beige plastic	PA66+33%GF
5	Black plastic	PPS
6	White plastic	PBT+30%GF
7	Silvery metal	SUS304
8	Black silicone ring (Sample Receiving Date: 2022.11.16)	Silicone
9	Red silicone ring (Sample Receiving Date: 2022.11.16)	Silicone
10	White silicone tube (Sample Receiving Date: 2022.11.16)	Silicone
11	White plastic tube	Teflon
12	Copper colored metal ring	Copper
13	Transparent plastic water tank	AS
14	Black plastic lid	ABS
15	Transparent inner glass fiber silicone tube (Sample Receiving Date: 2022.11.16)	Silicone
16	Transparent glass ball	Glass
17	Beige plastic rotor	PP
18	steam boiler	-
19	Coffee boiler	-
20	Water pump	-
21	Three way magnetic valve	-
22	Black silicone ring (Sample Receiving Date: 2022.12.13)	Silicone
23	Red silicone ring (Sample Receiving Date: 2022.12.07)	Silicone
24	White silicone tube (Sample Receiving Date: 2022.12.07)	Silicone
25	Transparent inner glass fiber silicone tube (Sample Receiving Date: 2022.12.14)	Silicone

TEST RESULT

Sensory Test (Odour and Taste) for Materials in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB

Parameter	Result		Maximum Allowable Limit
	1	2	
Odour transfer into foodstuff through simulant, Mineral water	0	0	2.5 Scale
Taste transfer into foodstuff through simulant, Mineral water	0	0	2.5 Scale
Conclusion	PASS	PASS	-

Note: Scale: 0 = no perceptible off-odour (or taste transfer);
1 = off-odour (or taste transfer) just perceptible (but still difficult to define);
2 = slight off-odour (or taste transfer);
3 = distinct off-odour (or taste transfer);
4 = strong off-odour (or taste transfer)

Method: DIN 10955: 2004-06

Overall Migration Test for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 1 h at 100 °C (10% Ethanol)

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		3				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	2.4			-	-
Volume of stimulant used	mL	240			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		4				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.72			-	-
Volume of stimulant used	mL	72			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-



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Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		11				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.6			-	-
Volume of stimulant used	mL	60			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Test Condition: 2 h at 70 °C (10% Ethanol)

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		5				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	1.92			-	-
Volume of stimulant used	mL	192			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		6				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.6			-	-
Volume of stimulant used	mL	60			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		14				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	1.0			-	-
Volume of stimulant used	mL	100			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		17				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	1.0			-	-
Volume of stimulant used	mL	100			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-



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Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		20				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	2.82			-	-
Volume of stimulant used	mL	282			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		21				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.72			-	-
Volume of stimulant used	mL	72			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Test Condition: 2 h at 70 °C (10% Ethanol)
2 h at 70 °C (50% Ethanol)

Simulant Used	Unit	Result			Maximum Allowable Limit (3 rd)	Analytical Tolerance
		13				
		1st Migrate	2nd Migrate	3rd Migrate		
Food contact surface area	dm ²	0.6			-	-
Volume of stimulant used	mL	60			-	-
10% Ethanol	mg/dm ²	<5	<5	<5	10	+2
50% Ethanol	mg/dm ²	<5	<5	<5	10	+2
Conclusion	-	PASS			-	-

Note: "<" = less than
mg/dm² = milligram per square decimeter

Method: EN 1186-1: 2002;

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
2) For article intended for repeated use, the migration tests are carried out three times on the same test sample.
3) Test condition and simulant were specified by client



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Specific Migration of Heavy Metals for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 1 h at 100 °C (3% Acetic acid)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			3			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	2.4			-
Volume of stimulant used	-	mL	400			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			4			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.72			-
Volume of stimulant used	-	mL	120			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			11			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Test Condition: 3 d at 40 °C (3% Acetic acid)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			5			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	1.92			-
Volume of stimulant used	-	mL	320			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			6			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			13			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			14			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-



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Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3rd)
			17			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm²	0.6			-
Volume of stimulant used	-	mL	100			-
Barium (Ba)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	1
Cobalt (Co)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Copper (Cu)	3% Acetic acid	mg/kg	<0.5	<0.5	<0.5	5
Iron (Fe)	3% Acetic acid	mg/kg	<5	<5	<5	48
Lithium (Li)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Manganese (Mn)	3% Acetic acid	mg/kg	<0.1	<0.1	<0.1	0.6
Zinc (Zn)	3% Acetic acid	mg/kg	0.2	<0.1	<0.1	5
Aluminum (Al)	3% Acetic acid	mg/kg	0.1	<0.1	<0.1	1
Nickel (Ni)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.02
Antimony (Sb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.04
Arsenic (As)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Cadmium (Cd)	3% Acetic acid	mg/kg	<0.002	<0.002	<0.002	Not detected
Chromium (Cr)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Europium (Eu)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Gadolinium (Gd)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lanthanum (La)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Lead (Pb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Mercury (Hg)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	Not detected
Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Sum of Europium (Eu), Gadolinium (Gd), Lanthanum (La), and/or Terbium (Tb)	3% Acetic acid	mg/kg	<0.01	<0.01	<0.01	0.05
Conclusion	-	-	PASS			-

Note: "<" = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and analysis by Inductively Coupled Plasma Mass Spectrometers (ICP-MS).

Remark: 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.

2) For article intended for repeated use, the migration tests are carried out three times on the same test sample.

3) Due to the fact that SML for As, Cr, Pb, Hg is specified as not detectable meaning < 0.01 mg/kg and SML for Cd is specified as not detectable meaning < 0.002 mg/kg analysis and assessment has to be performed using the 1st migrate in any case no matter whether article/materials is intended for single or repeated use.

4) Test condition and simulant were specified by client



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**Specific Migration of Primary Aromatic Amine for Plastic Materials in Contact with Foodstuffs –
Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its
Amendments, Regulation (EU) No 284/2011**

Test Condition: 1 h at 100 °C (3% Acetic acid)

Primary Aromatic Amines (PAAs)

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		3			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylydine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylydine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		4			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylidine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylidine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		11			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylidine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylidine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-



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Primary Aromatic Amines (PAAs)

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		3			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		4			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		11			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Test Condition: 3 d at 40 °C (3% Acetic acid)

Primary Aromatic Amines (PAAs)

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		14			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylidine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylidine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		20			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylidine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylidine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		21			
		1st Migrate	2nd Migrate	3rd Migrate	
Aniline	mg/kg	<0.002	<0.002	<0.002	0.01(sum)
2,4-Dimethylaniline / 2,4-xylydine	mg/kg	<0.002	<0.002	<0.002	
2,6-Dimethylaniline / 2,6-xylydine	mg/kg	<0.002	<0.002	<0.002	
p-Phenylenediamine / 1,4-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	
2,6-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	
1,5-Diaminenaphthalene	mg/kg	<0.002	<0.002	<0.002	
Conclusion	-	PASS			-



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Primary Aromatic Amines (PAAs)

Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		14			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		20			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-



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Parameter	Unit	Result			Maximum Allowable Limit(3 rd)
		21			
		1st Migrate	2nd Migrate	3rd Migrate	
4-aminobiphenyl / 4-biphenylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-anisidine / 2-methoxyaniline	mg/kg	<0.002	<0.002	<0.002	0.002
Benzidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-aniline / p-chloroaniline	mg/kg	<0.002	<0.002	<0.002	0.002
4-Chloro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Diaminodiphenylether / 4,4'-oxydianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-Methylenedianiline / 4,4'-diamino-diphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
4,4-Methylenedi-o-toluidine / 3,3'-dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<0.002	<0.002	<0.002	0.002
2-Methoxy-5-methylaniline / p-cresidine	mg/kg	<0.002	<0.002	<0.002	0.002
4-Methoxy-m-phenylenediamine / 2,4-diaminoanisole	mg/kg	<0.002	<0.002	<0.002	0.002
o-Toluidine / 2-aminotoluene	mg/kg	<0.002	<0.002	<0.002	0.002
2,4-Toluenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3-Dimethylbenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
2,4,5-Trimethylaniline	mg/kg	<0.002	<0.002	<0.002	0.002
m-Phenylenediamine / 1,3-phenylenediamine	mg/kg	<0.002	<0.002	<0.002	0.002
2-naphthylamine	mg/kg	<0.002	<0.002	<0.002	0.002
o-aminoazotoluene/ 4-amino-2',3-dimethylazobenzene/ 4-o-tolylazo-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
5-nitro-o-toluidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dichlorobenzidine	mg/kg	<0.002	<0.002	<0.002	0.002
3,3'-dimethoxybenzidine / o-dianisidine	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-methylene-bis-(2-chloro-aniline) / 2,2'-dichloro-4,4'-methylene-dianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4,4'-thiodianiline	mg/kg	<0.002	<0.002	<0.002	0.002
4-amino azobenzene	mg/kg	<0.002	<0.002	<0.002	0.002
Conclusion	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004, LC-MS/ LC-MS/MS analysis.

Remark: 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.

2) PAA listed in entry 43 to Appendix 8 of Annex XVII to Regulation (EC) No 1907/2006 and 1,3-phenylenediamine are specified as not detectable meaning < 0.002 mg/kg, assessment has to be performed using the 1st migrate in any case no matter whether article/materials is intended for single or repeated use.

3) Test condition and simulant were specified by client

Specific Migration of Caprolactam for Plastic Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 1 h at 100 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3 rd)
			3			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	2.4			-
Volume of stimulant used	-	mL	400			-
Caprolactam	10% Ethanol	mg/kg	<5	<5	<5	15
Conclusion	-	-	PASS			-

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3 rd)
			4			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.72			-
Volume of stimulant used	-	mL	120			-
Caprolactam	10% Ethanol	mg/kg	<5	<5	<5	15
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and prCEN/TS 13130-16:2004.

Remark: 1) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.

2) For article intended for repeated use, the migration tests are carried out three times on the same test sample.

3) Test condition and simulant were specified by client



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Specific Migration of Acrylonitrile for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 3 d at 40 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(1 st)
			13			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
Acrylonitrile	10% Ethanol	mg/kg	<0.01	<0.01	<0.01	Not Detected
Conclusion	-	-	PASS			-

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(1 st)
			14			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
Acrylonitrile	10% Ethanol	mg/kg	<0.01	<0.01	<0.01	Not Detected
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and EN 13130-3:2004.

Remark: 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.

2) Due to the fact that SML for Acrylonitrile is specified as not detectable meaning < 0.01 mg/kg, assessment has to be performed using the 1st migrate in any case no matter whether article/materials is intended for single or repeated use.

3) Test condition and simulant were specified by client

Specific Migration of 1,3-Butadiene for Plastic Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 3 d at 40 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(1 st)
			14			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
1,3-Butadiene	10% Ethanol	mg/kg	<0.01	<0.01	<0.01	Not Detected
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and EN 13130-15:2005.

Remark: 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.

2) Due to the fact that SML for Butadiene is specified as not detectable meaning < 0.01 mg/kg, assessment has to be performed using the 1st migrate in any case no matter whether article/materials is intended for single or repeated use.

3) Test condition and simulant were specified by client

Peroxides Value for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Parameter	Result					Maximum Allowable Limit
	3	4	8	9	10	
Peroxides	Absent	Absent	Absent	Absent	Absent	Absent
Conclusion	PASS	PASS	PASS	PASS	PASS	-

Parameter	Result				Maximum Allowable Limit
	13	14	15	17	
Peroxides	Absent	Absent	Absent	Absent	Absent
Conclusion	PASS	PASS	PASS	PASS	-

Method: European Pharmacopeia 5.0, Ph. Eur. Method 2.5.5.

Remark: The limit refers to BfR Recommendation XV,VI.

Specific Migration of Formaldehyde for Materials in Contact with Foodstuffs –Commission Regulation (EU) No. 10/2011, Commission Regulation (EU) No. 2020/1245 and Its Amendments

Test Condition: 1 h at 100 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3 rd)
			11			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
Formaldehyde	10% Ethanol	mg/kg	<1	<1	<1	15
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: EN 13130-1: 2004 and CEN/TS 13130-23:2005.

- Remark:
- 1) The migration test is carried out according to EU regulation No. 10/2011 and the corresponding regulatory statutes.
 - 2) For article intended for repeated use, the migration tests are carried out three times on the same test sample.
 - 3) Test condition and simulant were specified by client

Specific Migration of Phenolic Substance for Temperature Resistant Coating in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Test Condition: 1 h at 100 °C (10% Ethanol)

Parameter	Simulant Used	Unit	Result			Maximum Allowable Limit(3 rd)
			11			
			1st Migrate	2nd Migrate	3rd Migrate	
Food contact surface area	-	dm ²	0.6			-
Volume of stimulant used	-	mL	100			-
Phenolic Substance	10% Ethanol	mg/dm ²	<0.05	<0.05	<0.05	0.05
Conclusion	-	-	PASS			-

Note: “<” = less than
mg/dm² = milligram per square decimeter

Method: Food simulants extraction and analysis by Liquid Chromatography (LC).

- Remark:
- 1) The limit refers to BfR Recommendation LI.
 - 2) The migration test is carried out according to EC Regulation No. 10/2011 and the corresponding regulatory statutes.
 - 3) For article intended for repeated use, the migration tests are carried out three times on the same test sample.
 - 4) Test condition and simulant were specified by client

Volatile Organic Matter Content for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Test Condition: 24 h at 90 °C

Parameter	Unit	Result		Maximum Allowable Limit
		13	14	
Volatile Organic Matter	mg/dm ²	5.1	12.3	15
Conclusion	-	PASS	PASS	-

Test Condition: 4 h at 200 °C

Parameter	Unit	Result				Maximum Allowable Limit
		22	23	24	25	
Volatile Organic Matter	% (w/w)	0.28	0.19	0.27	0.23	0.5
Conclusion	-	PASS	PASS	PASS	PASS	-

Note: “<” = less than
 mg/dm² = milligram per square decimeter
 % w/w = percent weight by weight

Method: Gravimetric method.

Remark: The limit refers to BfR Recommendation VI, XV.

1,3-Butadiene Content for Plastic Materials in Contact with Foodstuffs – Commission Regulation (EU) No. 10/2011 and Its Amendments

Parameter	Unit	Result	Maximum Allowable Limit
		14	
1,3-Butadiene	mg/kg	0.8	1
Conclusion	-	PASS	-

Note: “<” = less than
 mg/kg = milligram per kilogram

Method: EN 13130-4: 2004

Extractable Matter Content for Silicon in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Parameter	Unit	Result				Maximum Allowable Limit
		8	9	10	15	
Extractable Matter	% w/w	<0.05	<0.05	<0.05	<0.05	0.5
Conclusion	-	PASS	PASS	PASS	PASS	-

Note: “<” = less than
 % w/w = percent weight by weight

Method: Gravimetric method after reflux for 5 hours with water.

Remark: The limit refers to BfR Recommendation XV.

Extractable Lead and Cadmium in Glass Wares – 84/500/EEC and Its Amendments

Tested Item : 16
Category : 2
Internal Depth (mm) : 4
Surface Area (dm²) : 0.6

Unit	Leaching Volume (mL)	Result (mg/L)	
		Extractable Lead (Pb)	Extractable Cadmium (Cd)
1	100	<0.05	<0.01
2	100	<0.05	<0.01
3	100	<0.05	<0.01
4	100	<0.05	<0.01
Average	-	<0.05	<0.01
Conclusion	-	PASS	PASS

Note: “<” = less than
mm = millimetre
mL = milliliter
dm² = square decimeter
mg/dm² = milligrams per square decimeter
mg/L = milligrams per liter

Method: EN 1388-2:1995.

Remark: Category 1 - Articles which cannot be filled and articles which can be filled, the internal depth of which, measured from the lowest point to the horizontal plane passing through the upper rim, does not exceed 25 mm.

Category 2 - Articles, not in categories 1 or 3, which can be filled.

Category 3 - Packaging and storage vessels having a capacity of more than 3 L and cooking ware.

Limit of Extractable Lead and Cadmium in Glass Wares listed in below table.

Category	Unit	Maximum Allowable Limit	
		Lead	Cadmium
1	mg/dm ²	0.8	0.07
2	mg/L	4.0	0.3
3	mg/L	1.5	0.1

Extractable Cobalt in Glass Wares

Tested Item : 16
Category : 2
Internal Depth (mm) : 4
Surface Area (dm²) : 0.6

Unit	Leaching Volume (mL)	Result (mg/L)
1	100	<0.01
2	100	<0.01
3	100	<0.01
4	100	<0.01
Average	-	<0.01
Conclusion	-	PASS

Note: “<” = less than
mm = millimetre
mL = milliliter
dm² = square decimeter
mg/dm² = milligrams per square decimeter
mg/L = milligrams per liter

Method: EN 1388-2:1995 modified.

Remark: Category 1 - Articles which cannot be filled and articles which can be filled, the internal depth of which, measured from the lowest point to the horizontal plane passing through the upper rim, does not exceed 25 mm.
Category 2 - Articles, not in categories 1 or 3, which can be filled.
Category 3 - Packaging and storage vessels having a capacity of more than 3 L and cooking ware.

The limit refers to “A study of release of cobalt from articles with food contact”, Lebensmittelchemie 61, 58 (2007), and listed in below table.

Category	Unit	Maximum Allowable Limit
		Cobalt
1	mg/dm ²	0.1
2	mg/L	0.01
3	mg/L	0.1

Total Chromium, Hafnium, Vanadium and Zirconium Content for Plastic Materials in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Parameter	Unit	Result	Maximum Allowable Limit
		17	
Total Chromium (Cr)	mg/kg	<2	10
Total Hafnium (Hf)	mg/kg	<10	100
Total Vanadium (V)	mg/kg	<2	20
Total Zirconium (Zr)	mg/kg	<10	100
Conclusion	-	PASS	-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: Acid digestion and analysis by Inductively Coupled Argon Plasma Spectrometer (ICP).

Remark: The limit refers to BfR Recommendation VII.

Migration of Heavy Metals Contents for Metal in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB

Test Condition: Artificial tap water: 1 h at 100 °C

Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		7			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[a]	
Envelope volume	cm ³	125	125	-	-
Volume of stimulant used	mL	125	125	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	<0.02	<0.02	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-



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Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		7	
		3rd Migrate	
Envelope volume	cm ³	125	-
Volume of stimulant used	mL	125	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-



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Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		18			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[a]	
Filling volume	cm ³	3.6	3.6	-	-
Volume of stimulant used	mL	2.4	2.4	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	<0.02	<0.02	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-



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Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		18	
		3rd Migrate	
Filling volume	cm ³	3.6	-
Volume of stimulant used	mL	2.4	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-



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Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		19			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[a]	
Filling volume	cm³	4.8	4.8	-	-
Volume of stimulant used	mL	3.2	3.2	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	<0.02	<0.02	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-



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Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		19	
		3rd Migrate	
Filling volume	cm ³	4.8	-
Volume of stimulant used	mL	3.2	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-



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Test Condition: Artificial tap water: 3 d at 40 °C

Parameter	Unit	Result			Seven Times of Maximum Specific Release Limit(s) (SRLs) ^[a, b]
		12			
		1st Migrate	2nd Migrate	Sum of 1st & 2nd Migrate ^[a]	
Envelope volume	cm³	125	125	-	-
Volume of stimulant used	mL	125	125	-	-
Aluminum (Al)	mg/kg	<0.1	<0.1	<0.1	35
Antimony (Sb)	mg/kg	<0.004	<0.004	<0.004	0.28
Chromium (Cr)	mg/kg	<0.1	<0.1	<0.1	1.75
Cobalt (Co)	mg/kg	<0.005	<0.005	<0.005	0.14
Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	28
Iron (Fe)	mg/kg	<5	<5	<5	280
Magnesium (Mg)	mg/kg	<0.5	<0.5	<0.5	-
Manganese (Mn)	mg/kg	<0.1	<0.1	<0.1	12.6
Molybdenum (Mo)	mg/kg	<0.01	<0.01	<0.01	0.84
Nickel (Ni)	mg/kg	<0.02	<0.02	<0.02	0.98
Silver (Ag)	mg/kg	<0.01	<0.01	<0.01	0.56
Tin (Sn)	mg/kg	<5	<5	<5	700
Titanium (Ti)	mg/kg	<0.5	<0.5	<0.5	-
Vanadium (V)	mg/kg	<0.002	<0.002	<0.002	0.07
Zinc (Zn)	mg/kg	<1	<1	<1	35
Arsenic (As)	mg/kg	<0.001	<0.001	<0.001	0.014
Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	8.4
Beryllium (Be)	mg/kg	<0.001	<0.001	<0.001	0.07
Cadmium (Cd)	mg/kg	<0.001	<0.001	<0.001	0.035
Lead (Pb)	mg/kg	<0.002	<0.002	<0.002	0.07
Lithium (Li)	mg/kg	<0.01	<0.01	<0.01	0.336
Mercury (Hg)	mg/kg	<0.0004	<0.0004	<0.0004	0.021
Thallium (Tl)	mg/kg	<0.00005	<0.00005	<0.00005	0.0007
Conclusion	-	-	-	PASS	-



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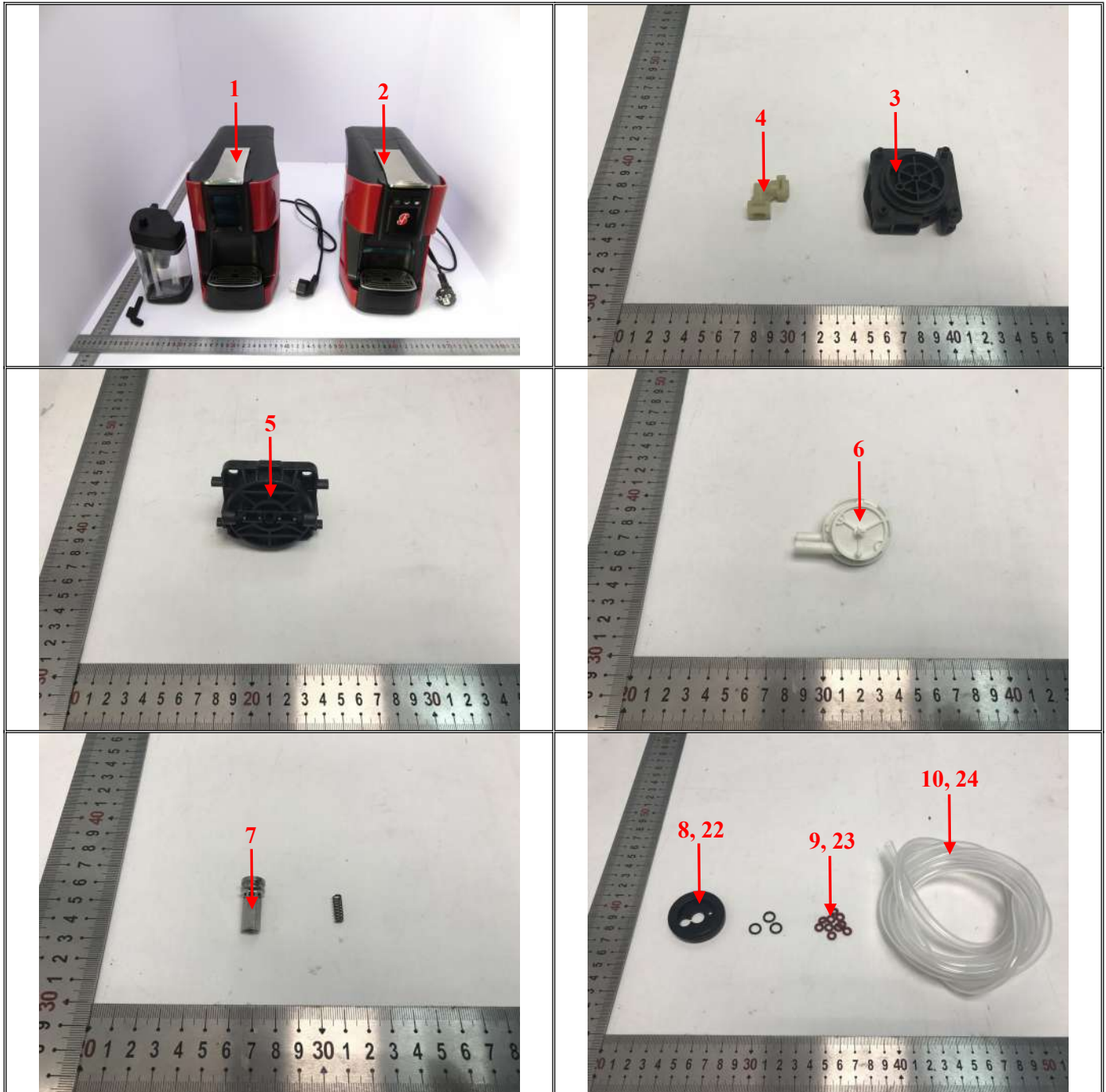
Parameter	Unit	Result	Maximum Specific Release Limit(s) (SRLs) ^[a]
		12	
		3rd Migrate	
Envelope volume	cm ³	125	-
Volume of stimulant used	mL	125	-
Aluminum (Al)	mg/kg	<0.1	5
Antimony (Sb)	mg/kg	<0.004	0.04
Chromium (Cr)	mg/kg	<0.1	0.25
Cobalt (Co)	mg/kg	<0.005	0.02
Copper (Cu)	mg/kg	<0.5	4
Iron (Fe)	mg/kg	<5	40
Magnesium (Mg)	mg/kg	<0.5	-
Manganese (Mn)	mg/kg	<0.1	1.8
Molybdenum (Mo)	mg/kg	<0.01	0.12
Nickel (Ni)	mg/kg	<0.02	0.14
Silver (Ag)	mg/kg	<0.01	0.08
Tin (Sn)	mg/kg	<5	100
Titanium (Ti)	mg/kg	<0.5	-
Vanadium (V)	mg/kg	<0.002	0.01
Zinc (Zn)	mg/kg	<1	5
Arsenic (As)	mg/kg	<0.001	0.002
Barium (Ba)	mg/kg	<0.1	1.2
Beryllium (Be)	mg/kg	<0.001	0.01
Cadmium (Cd)	mg/kg	<0.001	0.005
Lead (Pb)	mg/kg	<0.002	0.01
Lithium (Li)	mg/kg	<0.01	0.048
Mercury (Hg)	mg/kg	<0.0004	0.003
Thallium (Tl)	mg/kg	<0.00005	0.0001
Conclusion	-	PASS	-

Note: “<” = less than
mg/kg = milligram per kilogram

Method: With reference to Metals and Alloys used in Food Contact Materials and articles - A Practical Guide to Manufacturers and Regulators (2013 1st Edition) published by European Directorate for the Quality of Medicines and HealthCare (EDQM), Chapter 3.

Remark: 1) ^[a] denotes as this (these) maximum specific release limit(s) was (were) referenced from Metals and Alloys used in Food Contact Materials and articles - A Practical Guide to Manufacturers and Regulators (2013 1st Edition) published by European Directorate for the Quality of Medicines and HealthCare (EDQM), Chapter 1, Article 4, Tables 1 and 2.
2) Appropriate test condition(s) was (were) selected according to Guidelines on Testing Conditions for Articles in Contact with Foodstuffs (With a Focus on Kitchenware) (2009 1st Edition) published by European Commission Joint Research Center (JRC).
3) Artificial tap water was prepared according to German Standard DIN 10531: 2011-06.
4) ^[b] denotes as the sum of the results of the first and second migrates should not be exceed seven times the SRL

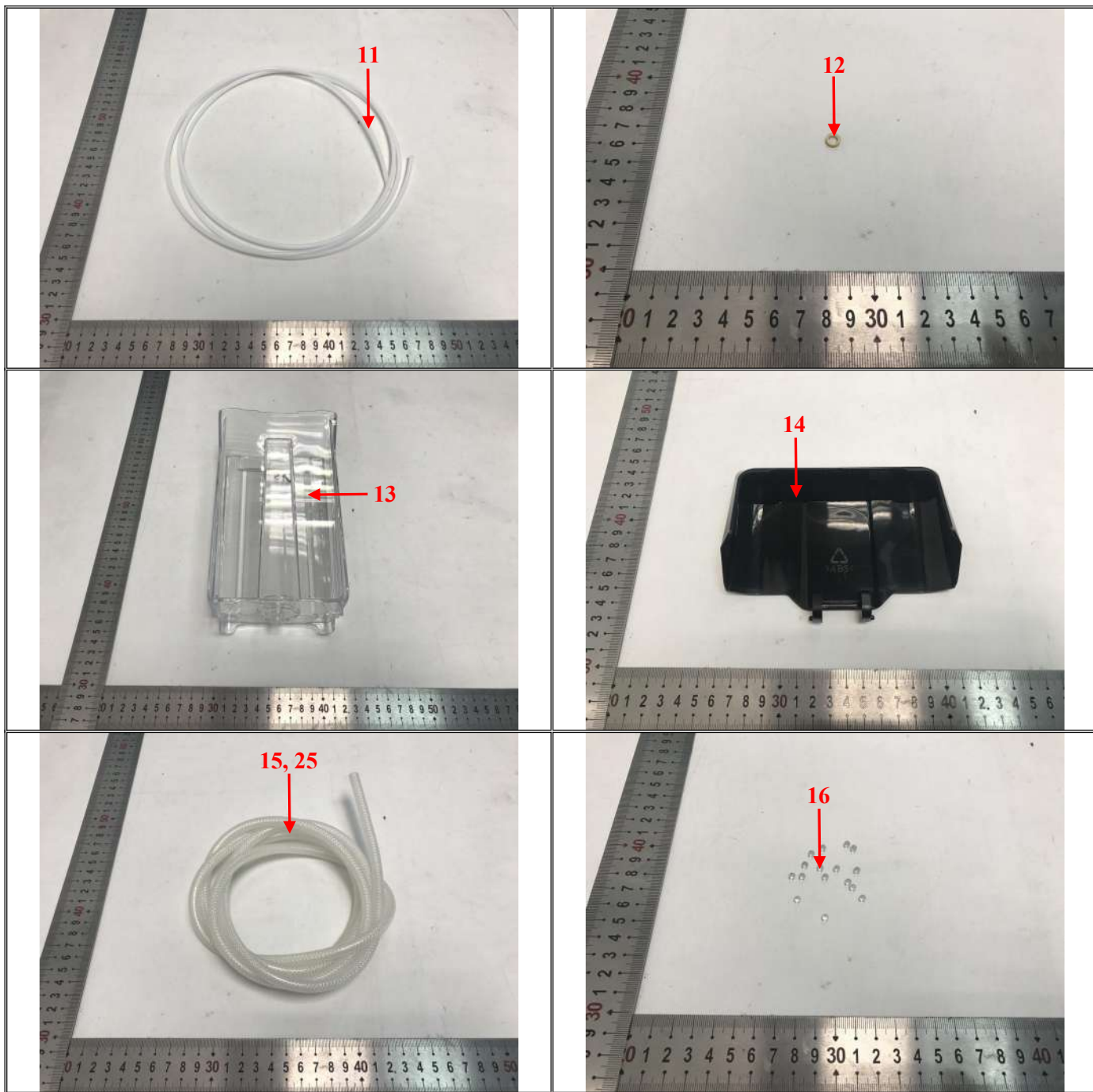
SAMPLE REFERENCE PHOTO:





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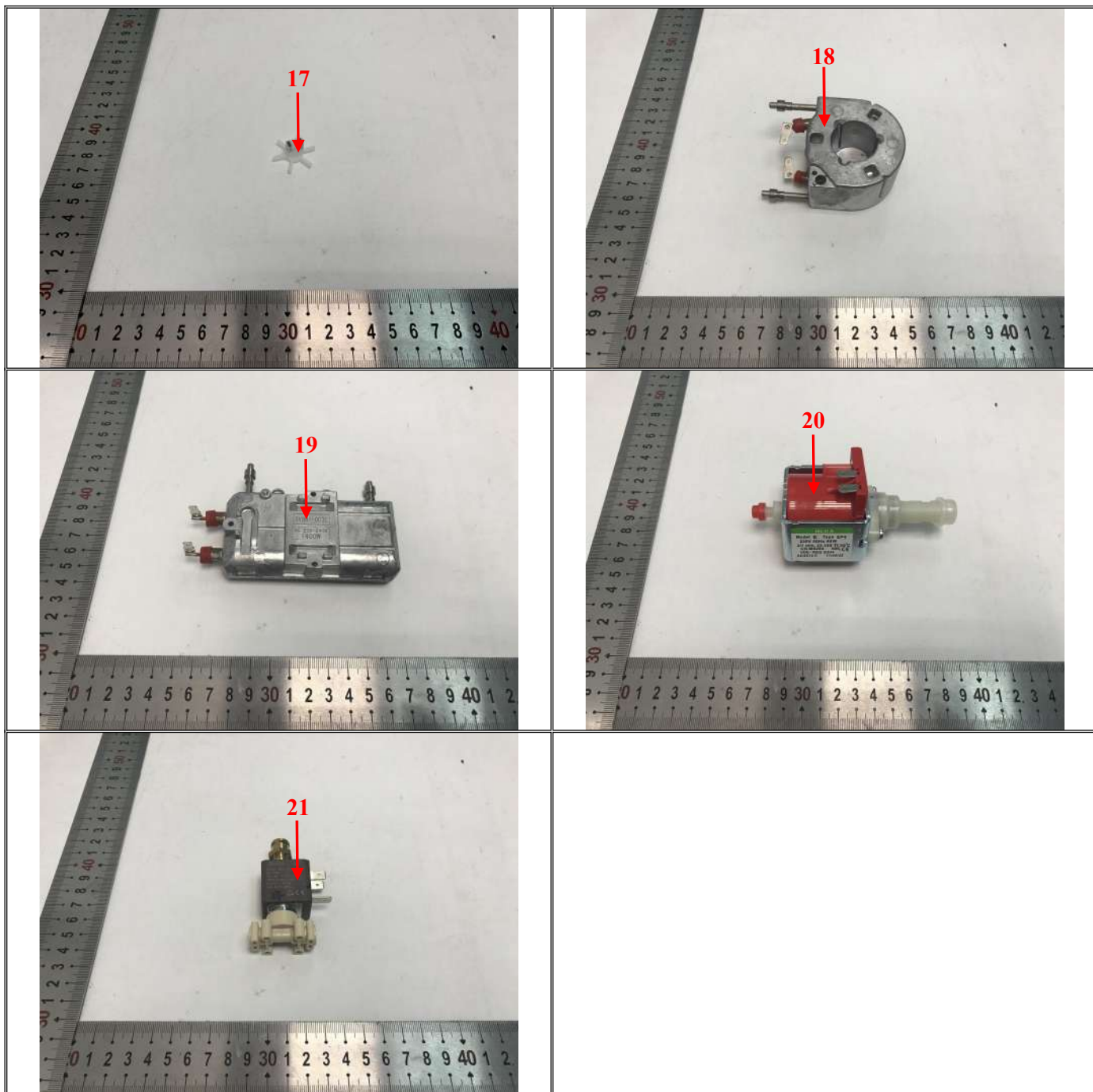
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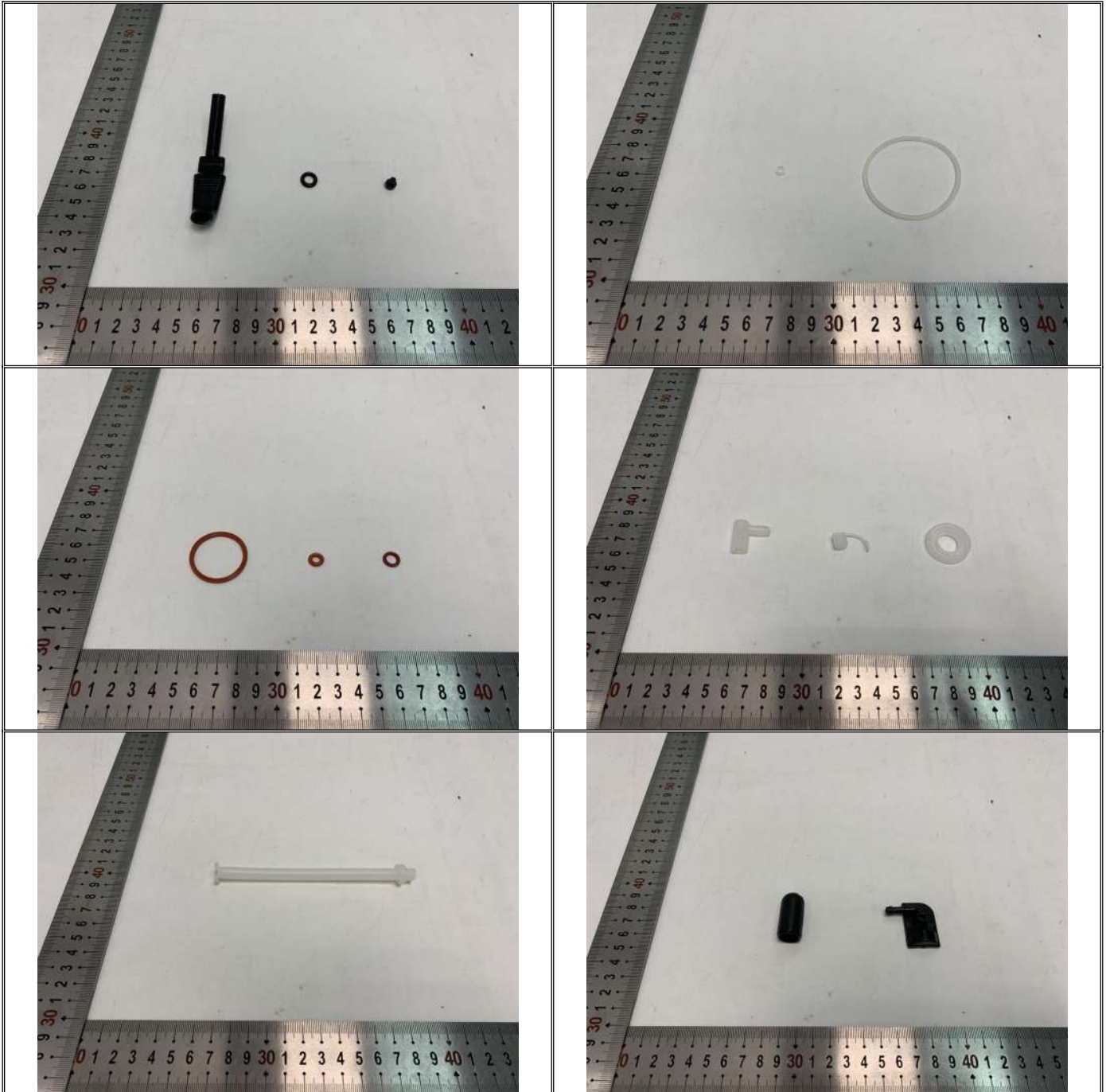


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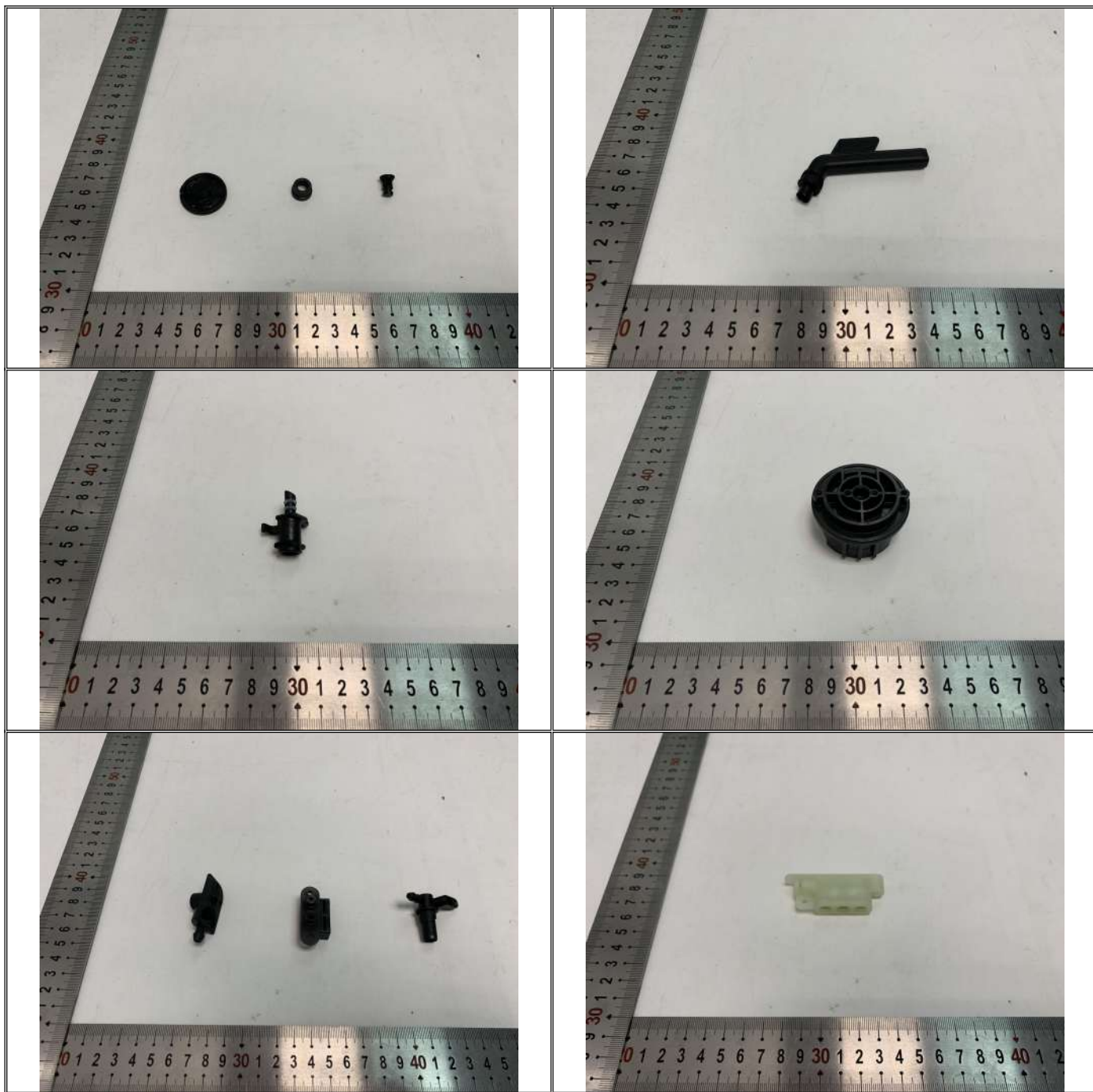
Untested sample which are by client's declaration made of same material as tested one





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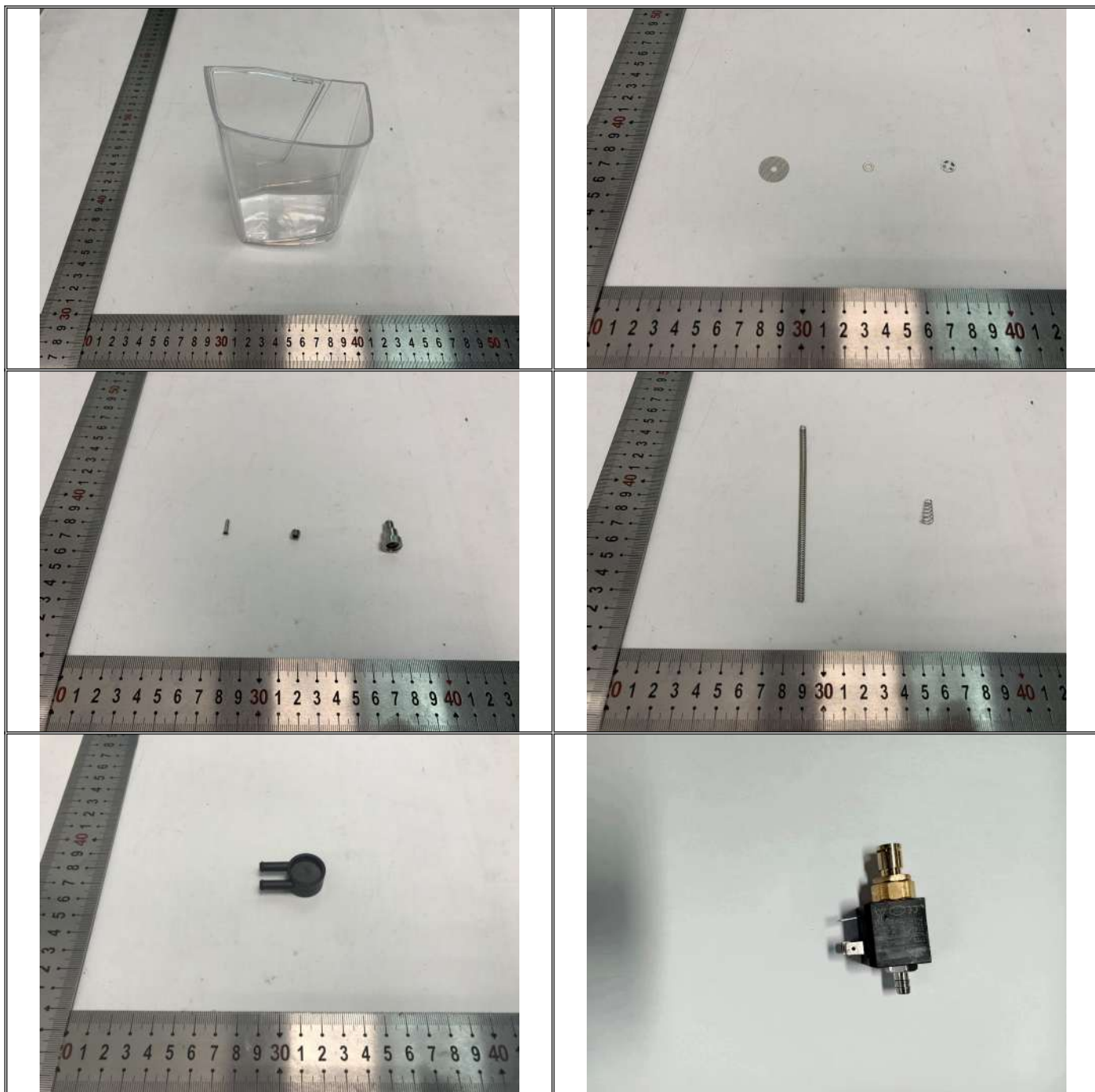
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END