

## Test Report

No. SHAHG2209329901

Date: 19 Jul 2022

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Client Name : VITAMIX MANUFACTURING CORPORATION

Client Address : 8615 USHER ROAD OLMSTED TWP, OHIO 44138

Sample Name : BLENDER CONTAINERS AND PARTS

Style No. : VM00143A VM0143B VM0143C CONTAINER AND LID

The above sample(s) and information were provided by the client.

SGS Job No. : SHHL2207026021CW - SH

Date of Sample Received : 08 Jul 2022

Testing Period : 08 Jul 2022 - 19 Jul 2022

Test Requested : Selected test(s) as requested by the client.

Test Method(s) : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

### Result Summary :

Test Requested	Conclusion
(EU) No 10/2011 and its amendment (EU) 2020/1245 Regulation-Overall migration	PASS
Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004-Sensorial examination odour and taste test	PASS
(EU) No 10/2011 and its amendment (EU) 2020/1245 Regulation -Specific migration of heavy metal	PASS
(EU) No 10/2011 and its amendment (EU) 2020/1245 Regulation-Specific migration of primary aromatic amine (total)	PASS
(EU) No 10/2011 and its amendment (EU) 2020/1245 Regulation-Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	PASS

Signed for and on behalf of  
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Alicia Lu

Alicia Lu

Approved Signatory

scan to see the report



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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.  
Testing Center-Chemical Laboratory

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Test Result(s) :

Test Part Description :

Specimen No.	SGS Sample ID	Description	Material (claimed by the client)
SN1	SHA22-093299.001	Black plastic lid	TPE
SN2	SHA22-093299.002	Transparent blue cup(VM0143A)	Tritan
SN3	SHA22-093299.003	Transparent blue cup(VM0143B)	Tritan
SN4	SHA22-093299.004	Transparent blue cup(VM0143C)	Tritan

Remarks :

- (1) mg/dm<sup>2</sup> = milligram per square decimeter
- (2) mg/kg = milligram per kilogram
- (3) °C= degree Celsius
- (4) < = less than
- (5) MDL = Method Detection Limit
- (6) ND = Not Detected ( < MDL)

### (EU) No 10/2011 and its amendment (EU) 2020/1245 Regulation-Overall migration

Test Method : With reference to Commission Regulation (EU) No 10/2011 of 14 January 2011 Annex III and Annex V for selection of condition and EN 1186-1:2002 for selection of test methods;  
EN 1186-3: 2002 aqueous food simulants by total immersion method;  
EN 1186-2: 2002 olive oil by total immersion method;

<u>Simulant Used</u>	<u>Time</u>	<u>Temperature</u>	<u>Max. Permissible Limit</u>	<u>Result of 001 Overall migration</u>	<u>Conclusion</u>
3% Acetic acid (W/V) aqueous solution (Third migration)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
3% Acetic acid (W/V) aqueous solution (Second migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
3% Acetic acid (W/V) aqueous solution (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
10% Ethanol (V/V) Aqueous Solution (Third migration)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS



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10% Ethanol (V/V) Aqueous Solution (Second migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
10% Ethanol (V/V) Aqueous Solution (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
Rectified olive oil (Third time)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
Rectified olive oil (Second time)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Rectified olive oil (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
Area/Volume			-	6.9dm <sup>2</sup> /kg	

<u>Simulant Used</u>	<u>Time</u>	<u>Temperature</u>	<u>Max. Permissible Limit</u>	<u>Result of 002 Overall migration</u>	<u>Conclusion</u>
3% Acetic acid (W/V) aqueous solution (Third migration)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
3% Acetic acid (W/V) aqueous solution (Second migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
3% Acetic acid (W/V) aqueous solution (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
10% Ethanol (V/V) Aqueous Solution (Third migration)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
10% Ethanol (V/V) Aqueous Solution (Second migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
10% Ethanol (V/V) Aqueous Solution (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
Rectified olive oil (Third time)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
Rectified olive oil (Second time)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Rectified olive oil (First migration)	2.0hr(s)	70°C	-	3.5mg/dm <sup>2</sup>	
Stability			-	--	YES



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Area/Volume - 10.0dm<sup>2</sup>/kg

<u>Simulant Used</u>	<u>Time</u>	<u>Temperature</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Result of 003</u> <u>Overall migration</u>	<u>Conclusion</u>
3% Acetic acid (W/V) aqueous solution (Third migration)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
3% Acetic acid (W/V) aqueous solution (Second migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
3% Acetic acid (W/V) aqueous solution (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
10% Ethanol (V/V) Aqueous Solution (Third migration)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
10% Ethanol (V/V) Aqueous Solution (Second migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
10% Ethanol (V/V) Aqueous Solution (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
Rectified olive oil (Third time)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
Rectified olive oil (Second time)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Rectified olive oil (First migration)	2.0hr(s)	70°C	-	3.2mg/dm <sup>2</sup>	
Stability			-	--	YES
Area/Volume			-	10.0dm <sup>2</sup> /kg	

<u>Simulant Used</u>	<u>Time</u>	<u>Temperature</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Result of 004</u> <u>Overall migration</u>	<u>Conclusion</u>
3% Acetic acid (W/V) aqueous solution (Third migration)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
3% Acetic acid (W/V) aqueous solution (Second migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
3% Acetic acid (W/V) aqueous solution (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	



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Stability			-	--	YES
10% Ethanol (V/V) Aqueous Solution (Third migration)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
10% Ethanol (V/V) Aqueous Solution (Second migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
10% Ethanol (V/V) Aqueous Solution (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
Rectified olive oil (Third time)	2.0hr(s)	70°C	10mg/dm <sup>2</sup>	<3.0mg/dm <sup>2</sup>	PASS
Rectified olive oil (Second time)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Rectified olive oil (First migration)	2.0hr(s)	70°C	-	<3.0mg/dm <sup>2</sup>	
Stability			-	--	YES
Area/Volume			-	10.0dm <sup>2</sup> /kg	

### Notes :

- (1) Analytical tolerance of aqueous simulants is 2 mg/dm<sup>2</sup> or 12 mg/kg.
- (2) Analytical tolerance of fatty food simulants is 3 mg/dm<sup>2</sup> or 20mg/kg.
- (3) Test condition & simulant were specified by client.
- (4) For Overall migration test of repeated use material or article:  
For repeated use, compliance of the material or article is verified on the basis of the level of the migration found in the third test and on the basis of the stability of the material or article from the first to the third migration test.

### Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004-Sensorial examination odour and taste test

Test Method : With reference to DIN 10955: 2004  
No. of panelist: 6

Test Item(s)	Limit	001	002	003
Test media	-	DW	DW	DW
Test time (hr(s))	-	0.5	2	2
Temperature(°C)	-	100	70	70
Sensorial examination odour (Point scale)	2.5	0	0	0
Sensorial examination taste (Point scale)	2.5	0	0	0
Conclusion		PASS	PASS	PASS



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<u>Test Item(s)</u>	<u>Limit</u>	<u>004</u>
Test media	-	DW
Test time (hr(s))	-	2
Temperature(°C)	-	70
Sensorial examination odour (Point scale)	2.5	0
Sensorial examination taste (Point scale)	2.5	0
<b>Conclusion</b>		<b>PASS</b>

### Notes :

Scale evaluation:

- 0 – no perceptible difference
- 1 – just perceptible difference
- 2 – slight difference
- 3 – marked difference
- 4 – strong difference
- DW= Distilled water

### (EU) No 10/2011 and its amendment (EU) 2020/1245 Regulation -Specific migration of heavy metal

Test Method : With reference to EN13130-1:2004, analysis was performed by ICP-OES and ICP-MS.

### Sample 001

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 100 °C 0.5 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	2.7
Arsenic(As)	ND	mg/kg	0.01	ND
Cadmium(Cd)	ND	mg/kg	0.002	ND
Chromium(Cr)	ND	mg/kg	0.01	ND
Mercury(Hg)	ND	mg/kg	0.01	ND
Lead(Pb)	ND	mg/kg	0.01	ND
Aluminium(Al)	-	mg/kg	0.1	ND
Barium(Ba)	-	mg/kg	0.25	ND
Cobalt(Co)	-	mg/kg	0.01	ND
Copper(Cu)	-	mg/kg	0.25	ND
Iron(Fe)	-	mg/kg	5	ND
Lithium(Li)	-	mg/kg	0.1	ND
Manganese(Mn)	-	mg/kg	0.1	ND



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Zinc(Zn)	-	mg/kg	0.5	ND
Nickel(Ni)	-	mg/kg	0.01	ND
Antimony(Sb)	-	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	-	mg/kg	-	ND

### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	ND	mg/kg	0.01	ND
Cadmium(Cd)	ND	mg/kg	0.002	ND
Chromium(Cr)	ND	mg/kg	0.01	ND
Mercury(Hg)	ND	mg/kg	0.01	ND
Lead(Pb)	ND	mg/kg	0.01	ND
Aluminium(Al)	-	mg/kg	0.1	ND
Barium(Ba)	-	mg/kg	0.25	ND
Cobalt(Co)	-	mg/kg	0.01	ND
Copper(Cu)	-	mg/kg	0.25	ND
Iron(Fe)	-	mg/kg	5	ND
Lithium(Li)	-	mg/kg	0.1	ND
Manganese(Mn)	-	mg/kg	0.1	ND
Zinc(Zn)	-	mg/kg	0.5	ND
Nickel(Ni)	-	mg/kg	0.01	ND
Antimony(Sb)	-	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	-	mg/kg	-	ND



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## Test Report

No. SHAHG2209329901

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### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	ND	mg/kg	0.01	ND
Cadmium(Cd)	ND	mg/kg	0.002	ND
Chromium(Cr)	ND	mg/kg	0.01	ND
Mercury(Hg)	ND	mg/kg	0.01	ND
Lead(Pb)	ND	mg/kg	0.01	ND
Aluminium(Al)	-	mg/kg	0.1	ND
Barium(Ba)	-	mg/kg	0.25	ND
Cobalt(Co)	-	mg/kg	0.01	ND
Copper(Cu)	-	mg/kg	0.25	ND
Iron(Fe)	-	mg/kg	5	ND
Lithium(Li)	-	mg/kg	0.1	ND
Manganese(Mn)	-	mg/kg	0.1	ND
Zinc(Zn)	-	mg/kg	0.5	ND
Nickel(Ni)	-	mg/kg	0.01	ND
Antimony(Sb)	-	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	-	mg/kg	-	ND

### Sample 004

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	ND	mg/kg	0.01	ND



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Cadmium(Cd)	ND	mg/kg	0.002	ND
Chromium(Cr)	ND	mg/kg	0.01	ND
Mercury(Hg)	ND	mg/kg	0.01	ND
Lead(Pb)	ND	mg/kg	0.01	ND
Aluminium(Al)	-	mg/kg	0.1	ND
Barium(Ba)	-	mg/kg	0.25	ND
Cobalt(Co)	-	mg/kg	0.01	ND
Copper(Cu)	-	mg/kg	0.25	ND
Iron(Fe)	-	mg/kg	5	ND
Lithium(Li)	-	mg/kg	0.1	ND
Manganese(Mn)	-	mg/kg	0.1	ND
Zinc(Zn)	-	mg/kg	0.5	ND
Nickel(Ni)	-	mg/kg	0.01	ND
Antimony(Sb)	-	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	-	mg/kg	-	ND

### Sample 001

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 100 °C 0.5 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	2.7
Arsenic(As)	-	mg/kg	0.01	ND
Cadmium(Cd)	-	mg/kg	0.002	ND
Chromium(Cr)	-	mg/kg	0.01	ND
Mercury(Hg)	-	mg/kg	0.01	ND
Lead(Pb)	-	mg/kg	0.01	ND
Aluminium(Al)	-	mg/kg	0.1	ND
Barium(Ba)	-	mg/kg	0.25	ND
Cobalt(Co)	-	mg/kg	0.01	ND
Copper(Cu)	-	mg/kg	0.25	ND
Iron(Fe)	-	mg/kg	5	ND
Lithium(Li)	-	mg/kg	0.1	ND



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Manganese(Mn)	-	mg/kg	0.1	ND
Zinc(Zn)	-	mg/kg	0.5	ND
Nickel(Ni)	-	mg/kg	0.01	ND
Antimony(Sb)	-	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	-	mg/kg	-	ND

### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	-	mg/kg	0.01	ND
Cadmium(Cd)	-	mg/kg	0.002	ND
Chromium(Cr)	-	mg/kg	0.01	ND
Mercury(Hg)	-	mg/kg	0.01	ND
Lead(Pb)	-	mg/kg	0.01	ND
Aluminium(Al)	-	mg/kg	0.1	ND
Barium(Ba)	-	mg/kg	0.25	ND
Cobalt(Co)	-	mg/kg	0.01	ND
Copper(Cu)	-	mg/kg	0.25	ND
Iron(Fe)	-	mg/kg	5	ND
Lithium(Li)	-	mg/kg	0.1	ND
Manganese(Mn)	-	mg/kg	0.1	ND
Zinc(Zn)	-	mg/kg	0.5	ND
Nickel(Ni)	-	mg/kg	0.01	ND
Antimony(Sb)	-	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	-	mg/kg	-	ND



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### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	-	mg/kg	0.01	ND
Cadmium(Cd)	-	mg/kg	0.002	ND
Chromium(Cr)	-	mg/kg	0.01	ND
Mercury(Hg)	-	mg/kg	0.01	ND
Lead(Pb)	-	mg/kg	0.01	ND
Aluminium(Al)	-	mg/kg	0.1	ND
Barium(Ba)	-	mg/kg	0.25	ND
Cobalt(Co)	-	mg/kg	0.01	ND
Copper(Cu)	-	mg/kg	0.25	ND
Iron(Fe)	-	mg/kg	5	ND
Lithium(Li)	-	mg/kg	0.1	ND
Manganese(Mn)	-	mg/kg	0.1	ND
Zinc(Zn)	-	mg/kg	0.5	ND
Nickel(Ni)	-	mg/kg	0.01	ND
Antimony(Sb)	-	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	-	mg/kg	-	ND

### Sample 004

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	-	mg/kg	0.01	ND



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Cadmium(Cd)	-	mg/kg	0.002	ND
Chromium(Cr)	-	mg/kg	0.01	ND
Mercury(Hg)	-	mg/kg	0.01	ND
Lead(Pb)	-	mg/kg	0.01	ND
Aluminium(Al)	-	mg/kg	0.1	ND
Barium(Ba)	-	mg/kg	0.25	ND
Cobalt(Co)	-	mg/kg	0.01	ND
Copper(Cu)	-	mg/kg	0.25	ND
Iron(Fe)	-	mg/kg	5	ND
Lithium(Li)	-	mg/kg	0.1	ND
Manganese(Mn)	-	mg/kg	0.1	ND
Zinc(Zn)	-	mg/kg	0.5	ND
Nickel(Ni)	-	mg/kg	0.01	ND
Antimony(Sb)	-	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	-	mg/kg	-	ND

### Sample 001

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 100 °C 0.5 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	2.7
Arsenic(As)	ND	mg/kg	0.01	ND
Cadmium(Cd)	ND	mg/kg	0.002	ND
Chromium(Cr)	ND	mg/kg	0.01	ND
Mercury(Hg)	ND	mg/kg	0.01	ND
Lead(Pb)	ND	mg/kg	0.01	ND
Aluminium(Al)	1	mg/kg	0.1	ND
Barium(Ba)	1	mg/kg	0.25	ND
Cobalt(Co)	0.05	mg/kg	0.01	ND
Copper(Cu)	5	mg/kg	0.25	ND
Iron(Fe)	48	mg/kg	5	ND
Lithium(Li)	0.6	mg/kg	0.1	ND



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Manganese(Mn)	0.6	mg/kg	0.1	ND
Zinc(Zn)	5	mg/kg	0.5	ND
Nickel(Ni)	0.02	mg/kg	0.01	ND
Antimony(Sb)	0.04	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	0.05	mg/kg	-	ND
Stability	-	-	-	YES
<b>Conclusion</b>				<b>PASS</b>

### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	ND	mg/kg	0.01	ND
Cadmium(Cd)	ND	mg/kg	0.002	ND
Chromium(Cr)	ND	mg/kg	0.01	ND
Mercury(Hg)	ND	mg/kg	0.01	ND
Lead(Pb)	ND	mg/kg	0.01	ND
Aluminium(Al)	1	mg/kg	0.1	ND
Barium(Ba)	1	mg/kg	0.25	ND
Cobalt(Co)	0.05	mg/kg	0.01	ND
Copper(Cu)	5	mg/kg	0.25	ND
Iron(Fe)	48	mg/kg	5	ND
Lithium(Li)	0.6	mg/kg	0.1	ND
Manganese(Mn)	0.6	mg/kg	0.1	ND
Zinc(Zn)	5	mg/kg	0.5	ND
Nickel(Ni)	0.02	mg/kg	0.01	ND
Antimony(Sb)	0.04	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND



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Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	0.05	mg/kg	-	ND
Stability	-	-	-	YES
<b>Conclusion</b>				<b>PASS</b>

### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	ND	mg/kg	0.01	ND
Cadmium(Cd)	ND	mg/kg	0.002	ND
Chromium(Cr)	ND	mg/kg	0.01	ND
Mercury(Hg)	ND	mg/kg	0.01	ND
Lead(Pb)	ND	mg/kg	0.01	ND
Aluminium(Al)	1	mg/kg	0.1	ND
Barium(Ba)	1	mg/kg	0.25	ND
Cobalt(Co)	0.05	mg/kg	0.01	ND
Copper(Cu)	5	mg/kg	0.25	ND
Iron(Fe)	48	mg/kg	5	ND
Lithium(Li)	0.6	mg/kg	0.1	ND
Manganese(Mn)	0.6	mg/kg	0.1	ND
Zinc(Zn)	5	mg/kg	0.5	ND
Nickel(Ni)	0.02	mg/kg	0.01	ND
Antimony(Sb)	0.04	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	0.05	mg/kg	-	ND
Stability	-	-	-	YES
<b>Conclusion</b>				<b>PASS</b>

### Sample 004

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)



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Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Arsenic(As)	ND	mg/kg	0.01	ND
Cadmium(Cd)	ND	mg/kg	0.002	ND
Chromium(Cr)	ND	mg/kg	0.01	ND
Mercury(Hg)	ND	mg/kg	0.01	ND
Lead(Pb)	ND	mg/kg	0.01	ND
Aluminium(Al)	1	mg/kg	0.1	ND
Barium(Ba)	1	mg/kg	0.25	ND
Cobalt(Co)	0.05	mg/kg	0.01	ND
Copper(Cu)	5	mg/kg	0.25	ND
Iron(Fe)	48	mg/kg	5	ND
Lithium(Li)	0.6	mg/kg	0.1	ND
Manganese(Mn)	0.6	mg/kg	0.1	ND
Zinc(Zn)	5	mg/kg	0.5	ND
Nickel(Ni)	0.02	mg/kg	0.01	ND
Antimony(Sb)	0.04	mg/kg	0.01	ND
Europium (Eu)	-	mg/kg	0.025	ND
Gadolinium(Gd)	-	mg/kg	0.025	ND
Lanthanum(La)	-	mg/kg	0.025	ND
Terbium(Tb)	-	mg/kg	0.025	ND
Europium (Eu)+ Gadolinium(Gd)+ Lanthanum(La)+ Terbium(Tb)	0.05	mg/kg	-	ND
Stability	-	-	-	YES
<b>Conclusion</b>				<b>PASS</b>

### Notes :

(1) Test condition & simulant were specified by client.

### (EU) No 10/2011 and its amendment (EU) 2020/1245 Regulation-Specific migration of primary aromatic amine (total)

Test Method : With reference to EN 13130-1: 2004, analysis was performed by UV-Vis.

### Sample 001

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 100 °C 0.5 hr(s)



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<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	2.7
Specific migration of primary aromatic amine	-	mg/kg	0.002	ND

### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	-	mg/kg	0.002	ND

### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	-	mg/kg	0.002	ND

### Sample 004

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	-	mg/kg	0.002	ND

### Sample 001

Simulant Used : 3% Acetic acid (W/V) aqueous solution



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Test Condition : 100 °C 0.5 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	2.7
Specific migration of primary aromatic amine	-	mg/kg	0.002	ND

### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	-	mg/kg	0.002	ND

### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	-	mg/kg	0.002	ND

### Sample 004

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	-	mg/kg	0.002	ND

### Sample 001

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Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 100 °C 0.5 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	2.7
Specific migration of primary aromatic amine	0.01	mg/kg	0.002	ND
Stability	-	-	-	YES
<b>Conclusion</b>				<b>PASS</b>

### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	0.01	mg/kg	0.002	ND
Stability	-	-	-	YES
<b>Conclusion</b>				<b>PASS</b>

### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	0.01	mg/kg	0.002	ND
Stability	-	-	-	YES
<b>Conclusion</b>				<b>PASS</b>

### Sample 004

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)



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<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of primary aromatic amine	0.01	mg/kg	0.002	ND
Stability	-	-	-	YES
<b>Conclusion</b>				<b>PASS</b>

Notes :

(1) Test condition & simulant were specified by client.

### (EU) No 10/2011 and its amendment (EU) 2020/1245 Regulation-Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)

Test Method : With reference to EN 13130-1: 2004, analysis was performed by GC-MS.

#### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	-	mg/kg	0.5	ND

#### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	-	mg/kg	0.5	ND

#### Sample 004



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Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	First
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	-	mg/kg	0.5	ND

### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	-	mg/kg	0.5	ND

### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	-	mg/kg	0.5	ND

### Sample 004

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

<u>Test Item(s)</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>Test result</u>
Migration times	-	-	-	Second
Area/volume	-	dm <sup>2</sup> /kg	-	6.0



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Specific migration of - mg/kg 0.5 ND  
2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)

### Sample 002

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	5	mg/kg	0.5	ND
Stability	-	-	-	YES
Conclusion				PASS

### Sample 003

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	5	mg/kg	0.5	ND
Stability	-	-	-	YES
Conclusion				PASS

### Sample 004

Simulant Used : 3% Acetic acid (W/V) aqueous solution

Test Condition : 70 °C 2.0 hr(s)

Test Item(s)	Max. Permissible Limit	Unit	MDL	Test result
Migration times	-	-	-	Third
Area/volume	-	dm <sup>2</sup> /kg	-	6.0
Specific migration of 2,2,4,4-Tetramethyl-1,3-cyclobutanediol(TMCD)	5	mg/kg	0.5	ND
Stability	-	-	-	YES



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Conclusion

PASS

Notes :

(1) Test condition & simulant were specified by client.

Remark:

For Specific migration test of repeated use material or article:

For repeated use, compliance of the material or article is verified on the basis of the level of the migration found in the third test and on the basis of the stability of the material or article from the first to the third migration test. For substances which limit is "Not Detected", the compliance is based on the first migration test result if it is detected.

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ( $w=0$ ) stated in ILAC-G8:09/2019.



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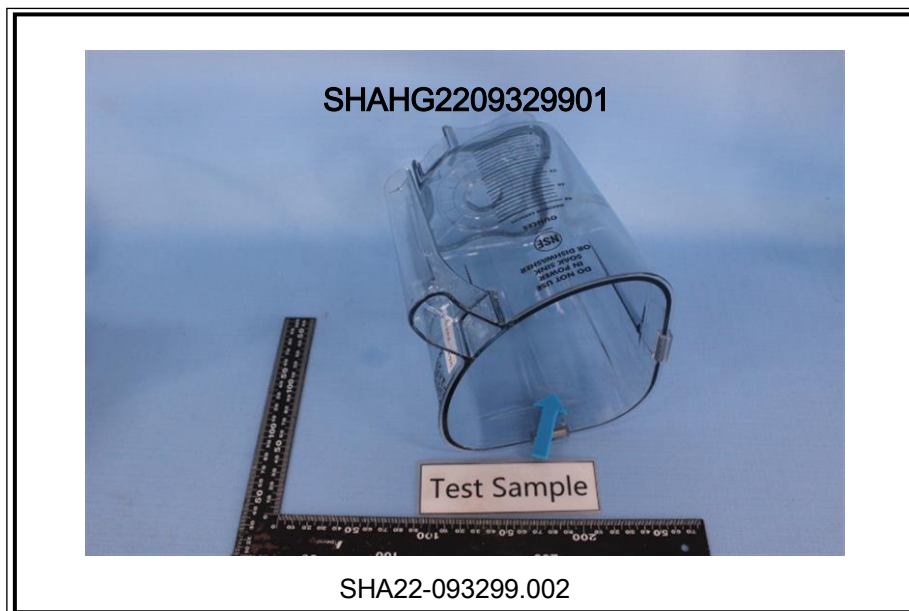
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Date: 19 Jul 2022

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Sample photo:



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SGS authenticate the photo on original report only

\*\*\* End of Report \*\*\*



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