

The following sample(s) was/were submitted and identified on behalf of the clients as : MUG

SGS Job No. : SP16-031737 - SH
Item No. : 62068
Date of Sample Received : 31 Aug 2016
Testing Period : 31 Aug 2016 - 23 Nov 2016
Test Requested : Selected test(s) as requested by client.
Test Method : Please refer to next page(s).
Test Results : Please refer to next page(s).

Result Summary :

Test Requested	Conclusion
Overall migration	PASS
Extractable component	PASS
Colour release	PASS
Sensorial examination odour and taste test	PASS
Specific migration of acrylonitrile	PASS
Specific migration of heavy metal	PASS
Lead(Pb) and cadmium(Cd)	PASS
Volatile organic matter (VOM)	PASS
Volatile organic matter	PASS
Bisphenol-A	PASS
Polycyclic aromatic hydrocarbons (PAHs)	PASS



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

Marry Ma

Marry Ma
Approved Signatory



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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description	Material (claimed by the client)
SN1	SHA16-194639.008	Black solid	PP
SN2	SHA16-194639.013	Transparent soft solid	Silicone rubber
SN3	SHA16-194639.024	Black solid	AS
SN4	SHA16-194639.026	Black solid	Tritan

Remarks :

- (1) mg/dm² = 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)

Overall migration

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments, European Commission Regulation (EU) No 10/2011 with amendments and BfR recommendations, to determine overall migration.

Test Method : For sample 024,026:
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;
EN1186-3:2002 aqueous food simulants by total immersion method;
For sample 008:
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;
EN1186-9:2002 aqueous food simulants by article filling method;

<u>Simulant Used</u>	<u>Time</u>	<u>Temperature</u>	<u>Max. Permissible Limit</u>	<u>Result of 008 Overall migration</u>	<u>Conclusion</u>
10% Ethanol (V/V) aqueous solution	2.0hr(s)	70°C	10mg/dm ²	<3.0mg/dm ²	PASS

<u>Simulant Used</u>	<u>Time</u>	<u>Temperature</u>	<u>Max. Permissible Limit</u>	<u>Result of 024 Overall migration</u>	<u>Conclusion</u>
10% Ethanol (V/V) aqueous solution	2.0hr(s)	70°C	10mg/dm ²	<3.0mg/dm ²	PASS



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<u>Simulant Used</u>	<u>Time</u>	<u>Temperature</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Result of 026</u> <u>Overall migration</u>	<u>Conclusion</u>
10% Ethanol (V/V) aqueous solution	2.0hr(s)	70°C	10mg/dm ²	<3.0mg/dm ²	PASS

Notes :

- (1) Analytical tolerance of aqueous simulants is 2 mg/dm² or 12 mg/kg
- (2) Test condition & simulant were specified by client.
- (3) The test data is obtained by considering the articles intended for repeated use as per described in Commission Regulation (EU) No 10/2011 of 14 January 2011 Annex V. Report the 3rd extractive result.

Extractable component

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments and BfR recommendation, to determine extractable component.

Test Method : With reference to 61st Mitteilung über die Untersuchung von Kunststoffen , Bundesgesundheitsbl 46 (2003) 362.

<u>Simulant Used</u>	<u>Time</u>	<u>Temperature</u>	<u>Max. Permissible</u> <u>Limit</u>	<u>Result of 013</u> <u>Extractives</u>	<u>Conclusion</u>
Deionized water	0.5hr(s)	70°C	0.5% (w/w)	<0.1% (w/w)	PASS
3% Acetic Acid	0.5hr(s)	70°C	0.5% (w/w)	<0.1% (w/w)	PASS

Notes :

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

Colour release

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments, to determine colour release.

Test Method : With reference to Kunststoffe im Lebensmittelverkehr, Part B II IX.

<u>Test Item(s)</u>	<u>Limit</u>	<u>008</u>	<u>024</u>
Colour release in Deionized water	★	Negative	Negative
Conclusion		PASS	PASS

Notes :

- (1) ★ = No colour release.



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(2) Negative = No colour release observed, Positive = Colour release observed.

Sensorial examination odour and taste test

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments, to determine sensorial examination odour and taste.

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

<u>Test Item(s)</u>	<u>Limit</u>	<u>008</u>	<u>013</u>	<u>024</u>
Test time (hr(s))	-	0.5	0.5	0.5
Temperature(°C)	-	100	100	100
Sensorial examination odour (Point scale)	2.5	0	0	0
Sensorial examination taste (Point scale)	2.5	0	0	0
Conclusion		PASS	PASS	PASS

<u>Test Item(s)</u>	<u>Limit</u>	<u>026</u>
Test time (hr(s))	-	0.5
Temperature(°C)	-	100
Sensorial examination odour (Point scale)	2.5	0
Sensorial examination taste (Point scale)	2.5	0
Conclusion		PASS

Notes :

Scale evaluation:

- 0 – no perceptible difference
- 1 – just perceptible difference
- 2 – slight difference
- 3 – marked difference
- 4 – strong difference



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Specific migration of acrylonitrile

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments, European Commission Regulation (EU) No 10/2011 with amendments and BfR recommendations, to determine specific migration of acrylonitrile.

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

Sample 024

Simulant Used : Deionized Water

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 ² /kg	-	6.0
Specific migration of acrylonitrile	0.01	mg/kg	0.01	ND
Conclusion				PASS

Notes :

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

Specific migration of heavy metal

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments, European Commission Regulation (EU) No 10/2011 with amendments and BfR recommendations, to determine specific migration of heavy metal.

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

Sample 008

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	-	-	-	Third
Area/volume	-	dm ² /kg	-	6.0



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Barium	1	mg/kg	0.25	ND
Cobalt	0.05	mg/kg	0.01	ND
Copper	5	mg/kg	0.25	ND
Iron	48	mg/kg	0.25	ND
Lithium	0.6	mg/kg	0.5	ND
Manganese	0.6	mg/kg	0.25	ND
Zinc	25	mg/kg	0.5	ND
Conclusion				PASS

Sample 024

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 ² /kg	-	6.0
Barium	1	mg/kg	0.25	ND
Cobalt	0.05	mg/kg	0.01	ND
Copper	5	mg/kg	0.25	ND
Iron	48	mg/kg	0.25	ND
Lithium	0.6	mg/kg	0.5	ND
Manganese	0.6	mg/kg	0.25	ND
Zinc	25	mg/kg	0.5	ND
Conclusion				PASS

Sample 026

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 ² /kg	-	6.0
Barium	1	mg/kg	0.25	ND
Cobalt	0.05	mg/kg	0.01	ND
Copper	5	mg/kg	0.25	ND
Iron	48	mg/kg	0.25	ND
Lithium	0.6	mg/kg	0.5	ND



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Manganese	0.6	mg/kg	0.25	ND
Zinc	25	mg/kg	0.5	ND
Conclusion				PASS

Notes :

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

Lead(Pb) and cadmium(Cd)

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments, European Commission Regulation (EU) No 10/2011 with amendments and BfR recommendations, to determine lead (Pb) and cadmium (Cd).

Test Method : Total lead and cadmium: Acidic digestion, analysis was performed by ICP-OES.

Test Item(s)	Limit	Unit	MDL	008	013	024
Total Lead	★	mg/kg	2	ND	ND	ND
Total Cadmium	★	mg/kg	2	ND	ND	ND
Conclusion				PASS	PASS	PASS

Test Item(s)	Limit	Unit	MDL	026
Total Lead	★	mg/kg	2	ND
Total Cadmium	★	mg/kg	2	ND
Conclusion				PASS

Notes :

(1) ★= Absent.

Volatile organic matter (VOM)

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments, European Commission Regulation (EU) No 10/2011 with amendments and BfR recommendations, to determine volatile organic matter (VOM).

Test Method : With reference to 19. Mitteilung über die Untersuchung von Kunststoffen, Bundesgesundheitsbl 14 (1971) 265.
Test condition: 90°C, 24 hours.



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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>024</u>
Volatile organic matter (VOM)	15	mg/dm ²	5	11
Conclusion				PASS

Volatile organic matter

Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments and BfR recommendation, to determine volatile organic matter (VOM).

Test Method : With reference to 61. Mitteilung über die Untersuchung von Kunststoffen, Bundesgesundheitsbl 46(2003)362
Test condition : 70°C, 0.5 hours

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>013</u>
Volatile organic matter (VOM)	0.5	% (w/w)	0.1	ND
Conclusion				PASS

Notes :

(1) %w/w =percentage of weight by weight

Bisphenol-A

Test Requested : In accordance with Commission Implementing Regulation (EU) 321/2011 amending Regulation (EU) 10/2011 of 14 January 2011, to determine bisphenol A.

Test Method : With reference to Part II Section D2 of Japan External Trade Organization, 2009, analysis was performed by LC-MS.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>008</u>	<u>013</u>	<u>024</u>
Bisphenol-A	★	mg/kg	0.1	ND	ND	ND
Conclusion				PASS	PASS	PASS

Notes :

★=prohibited

Polycyclic aromatic hydrocarbons (PAHs)



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Test Requested : In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 and 31 with amendments, European Commission Regulation (EU) No 10/2011 with amendments and BfR recommendations, to determine Polycyclic aromatic hydrocarbons(PAHs).

Test Method : With reference to AfPS GS 2014:01 PAK, analysis was performed by GC-MS.

Test Item(s)	Limit	Unit	MDL	008
Sum of 18 PAHs	1	mg/kg	-	ND
Sum of Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracene, Fluoranthene	1	mg/kg	-	ND
Naphthalene(NAP)	1	mg/kg	0.1	ND
Acenaphthylene(ANY)	-	mg/kg	0.1	ND
Acenaphthene(ANA)	-	mg/kg	0.1	ND
Fluorene(FLU)	-	mg/kg	0.1	ND
Phenanthrene(PHE)	-	mg/kg	0.1	ND
Anthracene(ANT)	-	mg/kg	0.1	ND
Fluoranthene(FLT)	-	mg/kg	0.1	ND
Pyrene(PYR)	-	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	0.2	mg/kg	0.1	ND
Chrysene(CHR)	0.2	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF) and Benzo(j)fluoranthene(BjF)	0.2	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)	0.2	mg/kg	0.1	ND
Benzo(a)pyrene(BaP)	0.2	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)	0.2	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	0.2	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)	0.2	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	0.2	mg/kg	0.1	ND
Conclusion				PASS

Test Item(s)	Limit	Unit	MDL	013
Sum of 18 PAHs	1	mg/kg	-	ND
Sum of Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracene, Fluoranthene	1	mg/kg	-	ND
Naphthalene(NAP)	1	mg/kg	0.1	ND
Acenaphthylene(ANY)	-	mg/kg	0.1	ND
Acenaphthene(ANA)	-	mg/kg	0.1	ND
Fluorene(FLU)	-	mg/kg	0.1	ND
Phenanthrene(PHE)	-	mg/kg	0.1	ND
Anthracene(ANT)	-	mg/kg	0.1	ND



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t E&E (86-21) 61402553 f E&E (86-21) 64953679 www.sgsgroup.com.cn
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Test Item(s)	Limit	Unit	MDL	013
Fluoranthene(FLT)	-	mg/kg	0.1	ND
Pyrene(PYR)	-	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	0.2	mg/kg	0.1	ND
Chrysene(CHR)	0.2	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF) and Benzo(j)fluoranthene(BjF)	0.2	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)	0.2	mg/kg	0.1	ND
Benzo(a)pyrene(BaP)	0.2	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)	0.2	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	0.2	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)	0.2	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	0.2	mg/kg	0.1	ND
Conclusion				PASS

Test Item(s)	Limit	Unit	MDL	024
Sum of 18 PAHs	1	mg/kg	-	ND
Sum of Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracene, Fluoranthene	1	mg/kg	-	ND
Naphthalene(NAP)	1	mg/kg	0.1	ND
Acenaphthylene(ANY)	-	mg/kg	0.1	ND
Acenaphthene(ANA)	-	mg/kg	0.1	ND
Fluorene(FLU)	-	mg/kg	0.1	ND
Phenanthrene(PHE)	-	mg/kg	0.1	ND
Anthracene(ANT)	-	mg/kg	0.1	ND
Fluoranthene(FLT)	-	mg/kg	0.1	ND
Pyrene(PYR)	-	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	0.2	mg/kg	0.1	ND
Chrysene(CHR)	0.2	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF) and Benzo(j)fluoranthene(BjF)	0.2	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)	0.2	mg/kg	0.1	ND
Benzo(a)pyrene(BaP)	0.2	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)	0.2	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	0.2	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)	0.2	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	0.2	mg/kg	0.1	ND
Conclusion				PASS

Test Item(s)	Limit	Unit	MDL	026
Sum of 18 PAHs	1	mg/kg	-	ND



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Test Item(s)	Limit	Unit	MDL	026
Sum of Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracene, Fluoranthene	1	mg/kg	-	ND
Naphthalene(NAP)	1	mg/kg	0.1	ND
Acenaphthylene(ANY)	-	mg/kg	0.1	ND
Acenaphthene(ANA)	-	mg/kg	0.1	ND
Fluorene(FLU)	-	mg/kg	0.1	ND
Phenanthrene(PHE)	-	mg/kg	0.1	ND
Anthracene(ANT)	-	mg/kg	0.1	ND
Fluoranthene(FLT)	-	mg/kg	0.1	ND
Pyrene(PYR)	-	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	0.2	mg/kg	0.1	ND
Chrysene(CHR)	0.2	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF) and Benzo(j)fluoranthene(BjF)	0.2	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)	0.2	mg/kg	0.1	ND
Benzo(a)pyrene(BaP)	0.2	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)	0.2	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	0.2	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)	0.2	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	0.2	mg/kg	0.1	ND
Conclusion				PASS



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Remark: The Latest Date of Sample Received : 15 Nov 2016.



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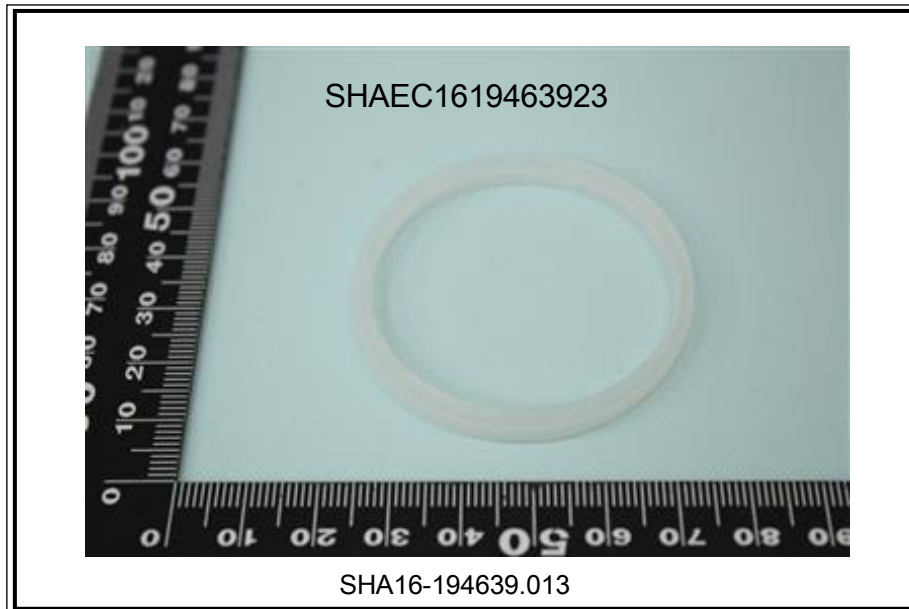
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