



Test Report

No. F690101/LF-CTSAYAA15-49407R1

Issued Date: 2015. 10. 07

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NPC CO., LTD.
289, Haean-ro, Danwon-gu, Ansan-si
Gyeonggi-do
Korea

The following sample(s) was/were submitted and identified by/on behalf of the client as:-

SGS File No. : AYAA15-49407R1
Product Name : Cap (Elastomer)
Item No./Part No. : N/A
Received Date : 2015. 09. 24
Test Period : 2015. 09. 24 to 2015. 10. 07
Test Result(s) : For further details, please refer to following page (s)
Supersede/Referral : The test report supercedes previous report number, "F690101/LF-CTSAYAA15-49407" issued by SGS Korea Co., Ltd.

Result Summary :

Test Requested	Conclusion
1. Commission Regulation (EU) No 10/2011 and hence Article 3 of European Regulation No. 1935/2004.	-
a) Plastic – Overall Migration	PASS
b) Plastic – Specific Migration of Heavy Metals	PASS
c) Plastic-Specific Migration of 1,3-butadiene	PASS
d) Plastic-Residual 1,3-butadiene	PASS
2. German Food, Articles of Daily Use and Feed Code of September 1, 2005(LFGB), Section 31	-
a) Sensorial examination odour and taste test	PASS

SGS Korea Co., Ltd.

Jeff Jang / Chemical Lab manager

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Sample No. : AYAA15-49407R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

Test result(s) :

1. European Commission Regulation (EU) No 10/2011

a) Plastic – Overall migration

Method: With reference to EN 1186-1:2002 for selection of conditions and test methods;

EN 1186-3:2002 aqueous food simulants by total immersion method;

Simulant Used	Test Condition	Result (mg/dm ²)	Detection Limit (mg/dm ²)	Permissible (mg/dm ²)
20% Ethanol(V/V) Aqueous Solution	70 °C for 2 hrs	N.D	3.0	10
Comment	--	PASS	--	--

Note : 1. mg/dm² = milligram per square decimeter

2. °C = degree Celsius

3. N.D = Not Detected

4. Permissible Limit is according to Commission Regulation (EU) No 10/2011 of January 2011 with amendments.

Remark:

1. Analytical tolerance of aqueous simulants is 1mg/dm² or 6mg/kg
2. Analytical tolerance of fatty food simulants is 3mg/dm² or 20mg/kg
3. Test condition & simulant were specified by client.

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F401 Version 2

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Sample No. : AYAA15-49407R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

b) Plastic – Specific migration of Heavy metals

Method: With reference to EN 13130-1:2004. Analysis was performed by ICP-MS / ICP-OES.

Simulant Used: 3 % acetic acid (w/v) in aqueous solution

Test Condition: 70 °C for 2 hrs

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible (mg/kg)
Specific Migration of Barium	N.D	0.3	1
Specific Migration of Cobalt	N.D	0.01	0.05
Specific Migration of Copper	N.D	0.3	5
Specific Migration of Iron	N.D	0.3	48
Specific Migration of Lithium	N.D	0.5	0.6
Specific Migration of Manganese	N.D	0.3	0.6
Specific Migration of Zinc	N.D	0.5	25
Comment	PASS	--	--

Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. °C = degree Celsius

3.N.D -= Not Detected.

4.Permissible Limit is according to Commission Regulation (EU) No 10/2011 of January 2011 with amendments.

Remark : 1. Test condition & simulant were specified by client

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Sample No. : AYAA15-49407R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

c) Plastic - Specific Migration of 1, 3-butadiene

Method: With reference to EN 13130-15:2005. Analysis was performed by GC/MS

Simulant Used: olive oil

Test Condition: 70 °C for 2 hrs

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible Limit (mg/kg)
Specific migration of 1,3-butadiene	N.D	0.01	0.01
Comment	PASS	--	--

Note: 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. °C = degree Celsius

3. N.D = Not Detected

Remark: 1. Compliance is based on the 1st extractive result only as per described in Commission Regulation (EU) No 10/2011 of 14 January 2011 Annex V.

1. Test condition & simulant were specified by client.

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Sample No. : AYAA15-49407R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

d) Residual 1,3-butadiene

Method: With reference to EN 13130-4:2004. Analysis was performed by Headspace GC/MS

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible Limit (mg/kg)
1,3-butadiene content	N.D	1	1
Comment	PASS	--	--

Note: 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. N.D = Not Detected

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Sample No. : AYAA15-49407R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

2. In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB) with its amendment, Section 30 and 31, and article 3 of EU Regulation (EC) No 1935/2004

a) Sensorial examination of odour and taste

Test Method: With reference to DIN10955: 2004

Migration condition: 70 °C for 2 hrs

Test Simulant: Water

The number of panelists: 6

Test Results :

Test Simulant	Test Item	Result	Maximum Permissible Limit
Water	Sensorial examination odour	1.0	2.5
	Sensorial examination taste	1.0	2.5
Comment		PASS	--

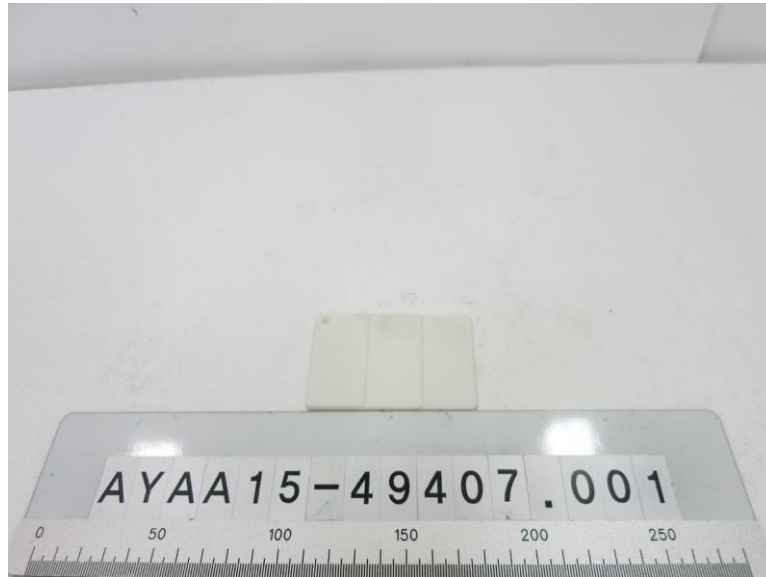
Note : 1. Intensity scale (rounded at 0.5):

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

2. Permissible Limit is according to LFGB with its amendment, Section 30 and 31, and Regulation (EC) No 1935/2004 of The European Parliament and of the Council of 27 October 2004.

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Picture of Samples as Received:



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Test Report

No. F690101/LF-CTSAYAA15-47942R1

Issued Date: 2015. 09. 25

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NPC CO., LTD.
289, Haean-ro, Danwon-gu, Ansan-si
Gyeonggi-do
Korea

The following sample(s) was/were submitted and identified by/on behalf of the client as:-

SGS File No. : AYAA15-47942R1
Product Name : Cup
Item No./Part No. : N/A
Received Date : 2015. 09. 16
Test Period : 2015. 09. 16 to 2015. 09. 25
Test Result(s) : For further details, please refer to following page (s)
Supersede/Referral : The test report supercedes previous report number, "F690101/LF-CTSAYAA15-47942" issued by SGS Korea Co., Ltd.

Result Summary

Test Requested	Conclusion
1. Commission Regulation (EU) No 10/2011 and hence Article 3 of European Regulation No. 1935/2004.	-
a) Plastic – Overall Migration	PASS
b) Plastic – Specific Migration of Heavy Metals	PASS
2. German Food, Articles of Daily Use and Feed Code of September 1, 2005(LFGB), Section 31	-
a) Sensorial examination odour and taste test	PASS

SGS Korea Co., Ltd.

Jeff Jang / Chemical Lab manager

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No. F690101/LF-CTSAYAA15-47942R1

Issued Date: 2015. 09. 25

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Sample No. : AYAA15-47942R1.001

Sample Description : Cup

Item / Part No. : N/A

Test result(s) :

1. European Commission Regulation (EU) No 10/2011

a) Plastic – Overall migration

Method: With reference to EN 1186-1:2002 for selection of conditions and test methods;

EN 1186-3:2002 aqueous food simulants by article filling method;

Simulant Used	Test Condition	Result (mg/dm ²)	Detection Limit (mg/dm ²)	Permissible (mg/dm ²)
20% Ethanol(V/V) Aqueous Solution	70 °C for 2 hrs	N.D	3.0	10
Comment	--	PASS	--	--

Note : 1. mg/dm² = milligram per square decimeter

2. °C = degree Celsius

3. N.D = Not Detected

4. Permissible Limit is according to Commission Regulation (EU) No 10/2011 of January 2011 with amendments.

Remark:

1. Analytical tolerance of aqueous simulants is 1mg/dm² or 6mg/kg
2. Analytical tolerance of fatty food simulants is 3mg/dm² or 20mg/kg
3. Test condition & simulant were specified by client.

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Issued Date: 2015. 09. 25

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Sample No. : AYAA15-47942R1.001

Sample Description : Cup

Item / Part No. : N/A

b) Plastic – Specific migration of Heavy metals

Method: With reference to EN 13130-1:2004. Analysis was performed by ICP-MS / ICP-OES.

Simulant Used: 3 % acetic acid (w/v) in aqueous solution

Test Condition: 70 °C for 2 hrs

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible (mg/kg)
Specific Migration of Barium	N.D	0.3	1
Specific Migration of Cobalt	N.D	0.01	0.05
Specific Migration of Copper	N.D	0.3	5
Specific Migration of Iron	N.D	0.3	48
Specific Migration of Lithium	N.D	0.5	0.6
Specific Migration of Manganese	N.D	0.3	0.6
Specific Migration of Zinc	N.D	0.5	25
Comment	PASS	--	--

Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. °C = degree Celsius

3.N.D -= Not Detected.

4.Permissible Limit is according to Commission Regulation (EU) No 10/2011 of January 2011 with amendments.

Remark : 1. Test condition & simulant were specified by client

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Test Report

No. F690101/LF-CTSAYAA15-47942R1

Issued Date: 2015. 09. 25

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Sample No. : AYAA15-47942R1.001

Sample Description : Cup

Item / Part No. : N/A

2. In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB) with its amendment, Section 30 and 31, and article 3 of EU Regulation (EC) No 1935/2004

a) Sensorial examination of odour and taste

Test Method: With reference to DIN10955: 2004

Migration condition: 70 °C for 2 hrs

Test Simulant: Water

The number of panelists: 6

Test Results :

Test Simulant	Test Item	Result	Maximum Permissible Limit
Water	Sensorial examination odour	0.5	2.5
	Sensorial examination taste	1.0	2.5
Comment		PASS	--

Note : 1. Intensity scale (rounded at 0.5):

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

2. Permissible Limit is according to LFGB with its amendment, Section 30 and 31, and Regulation (EC) No 1935/2004 of The European Parliament and of the Council of 27 October 2004.

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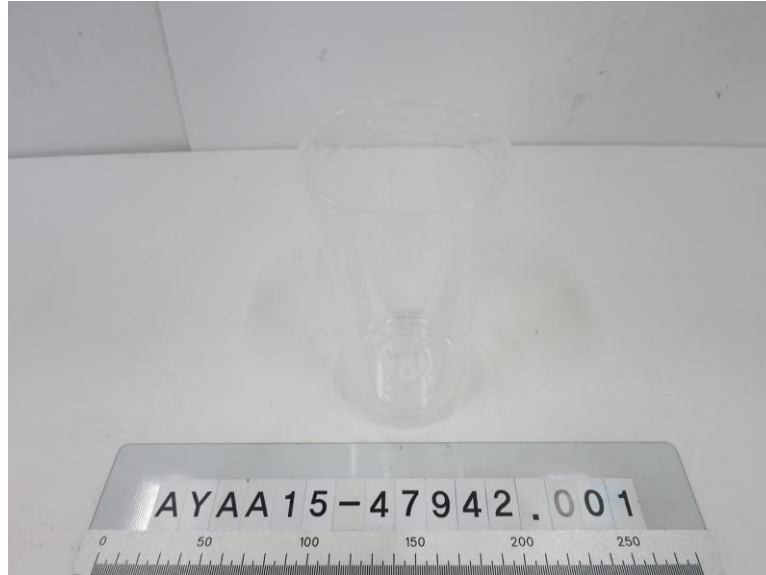
F401 Version 2

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Picture of Samples as Received:



*** End of Report ***

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Test Report

No. F690101/LF-CTSAYAA15-63372R1

Issued Date: 2015. 12. 24

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NPC CO., LTD.
289, Haean-ro, Danwon-gu, Ansan-si
Gyeonggi-do
Korea

The following sample(s) was/were submitted and identified by/on behalf of the client as:-

SGS File No. : AYAA15-63372R1
Product Name : Cap (Elastomer)
Item No./Part No. : N/A
Received Date : 2015. 12. 15
Test Period : 2015. 12. 15 to 2015. 12. 24
Test Result(s) : For further details, please refer to following page (s)
Supersede/Referral : The test report supercedes previous report number, "F690101/LF-CTSAYAA15-63372" issued by SGS Korea Co., Ltd.

Result Summary

Test Requested	Conclusion
1. Commission Regulation (EU) No 10/2011 and hence Article 3 of European Regulation No. 1935/2004.	-
a) Plastic – Overall Migration	PASS
b) Plastic – Specific Migration of Heavy Metals	PASS
c) Plastic-Specific Migration of 1,3-butadiene	PASS
d) Plastic-Residual 1,3-butadiene	PASS
2. German Food, Articles of Daily Use and Feed Code of September 1, 2005(LFGB), Section 31	-
a) Sensorial examination odour and taste test	PASS

SGS Korea Co., Ltd.

Jeff Jang / Chemical Lab manager

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No. F690101/LF-CTSAYAA15-63372R1

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Sample No. : AYAA15-63372R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

Test result(s) :

1. European Commission Regulation (EU) No 10/2011

a) Plastic – Overall migration

Method: With reference to EN 1186-1:2002 for selection of conditions and test methods;

EN 1186-3:2002 aqueous food simulants by total immersion method;

Simulant Used	Test Condition	Result (mg/dm ²)	Detection Limit (mg/dm ²)	Permissible (mg/dm ²)
20% Ethanol(V/V) Aqueous Solution	70 °C for 2 hrs	N.D	3.0	10
Comment	--	PASS	--	--

Note : 1. mg/dm² = milligram per square decimeter

2. °C = degree Celsius

3. N.D = Not Detected

4. Permissible Limit is according to Commission Regulation (EU) No 10/2011 of January 2011 with amendments.

Remark:

1. Analytical tolerance of aqueous simulants is 1mg/dm² or 6mg/kg
2. Analytical tolerance of fatty food simulants is 3mg/dm² or 20mg/kg
3. Test condition & simulant were specified by client.

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Test Report

No. F690101/LF-CTSAYAA15-63372R1

Issued Date: 2015. 12. 24

Page 3 of 7

Sample No. : AYAA15-63372R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

b) Plastic – Specific migration of Heavy metals

Method: With reference to EN 13130-1:2004. Analysis was performed by ICP-MS / ICP-OES.

Simulant Used: 3 % acetic acid (w/v) in aqueous solution

Test Condition: 70 °C for 2 hrs

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible (mg/kg)
Specific Migration of Barium	N.D	0.3	1
Specific Migration of Cobalt	N.D	0.01	0.05
Specific Migration of Copper	N.D	0.3	5
Specific Migration of Iron	N.D	0.3	48
Specific Migration of Lithium	N.D	0.5	0.6
Specific Migration of Manganese	N.D	0.3	0.6
Specific Migration of Zinc	N.D	0.5	25
Comment	PASS	--	--

Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. °C = degree Celsius

3.N.D -= Not Detected.

4.Permissible Limit is according to Commission Regulation (EU) No 10/2011 of January 2011 with amendments.

Remark : 1. Test condition & simulant were specified by client

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Test Report

No. F690101/LF-CTSAYAA15-63372R1

Issued Date: 2015. 12. 24

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Sample No. : AYAA15-63372R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

c) Plastic - Specific Migration of 1, 3-butadiene

Method: With reference to EN 13130-15:2005. Analysis was performed by GC/MS

Simulant Used: olive oil

Test Condition: 70 °C for 2 hrs

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible Limit (mg/kg)
Specific migration of 1,3-butadiene	N.D	0.01	0.01
Comment	PASS	--	--

Note: 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. °C = degree Celsius

3. N.D = Not Detected

Remark: 1. Compliance is based on the 1st extractive result only as per described in Commission Regulation (EU) No 10/2011 of 14 January 2011 Annex V.

1. Test condition & simulant were specified by client.

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Test Report

No. F690101/LF-CTSAYAA15-63372R1

Issued Date: 2015. 12. 24

Page 5 of 7

Sample No. : AYAA15-63372R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

d) Residual 1,3-butadiene

Method: With reference to EN 13130-4:2004. Analysis was performed by Headspace GC/MS

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible Limit (mg/kg)
1,3-butadiene content	N.D	1	1
Comment	PASS	--	--

Note: 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. N.D = Not Detected

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Test Report

No. F690101/LF-CTSAYAA15-63372R1

Issued Date: 2015. 12. 24

Page 6 of 7

Sample No. : AYAA15-63372R1.001

Sample Description : Cap (Elastomer)

Item / Part No. : N/A

2. In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB) with its amendment, Section 30 and 31, and article 3 of EU Regulation (EC) No 1935/2004

a) Sensorial examination of odour and taste

Test Method: With reference to DIN10955: 2004

Migration condition: 70 °C for 2 hrs

Test Simulant: Water

The number of panelists: 6

Test Results :

Test Simulant	Test Item	Result	Maximum Permissible Limit
Water	Sensorial examination odour	1.0	2.5
	Sensorial examination taste	2.0	2.5
Comment		PASS	--

Note : 1. Intensity scale (rounded at 0.5):

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

2. Permissible Limit is according to LFGB with its amendment, Section 30 and 31, and Regulation (EC) No 1935/2004 of The European Parliament and of the Council of 27 October 2004.

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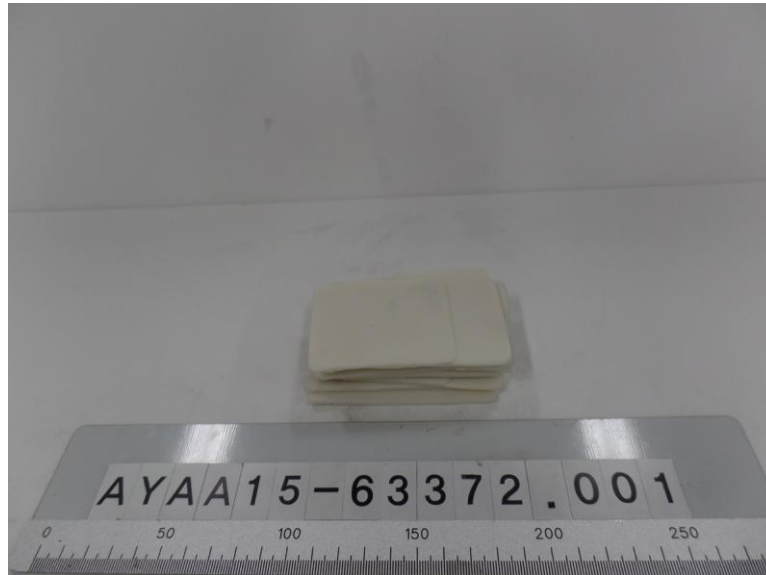
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Picture of Samples as Received:



*** End of Report ***

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Test Report

No. F690101/LF-CTSAYAA15-47940R1

Issued Date: 2015. 09. 25

Page 1 of 6

NPC CO., LTD.
289, Haean-ro, Danwon-gu, Ansan-si
Gyeonggi-do
Korea

The following sample(s) was/were submitted and identified by/on behalf of the client as:-

SGS File No. : AYAA15-47940R1
Product Name : Tension
Item No./Part No. : N/A
Received Date : 2015. 09. 16
Test Period : 2015. 09. 16 to 2015. 09. 25
Test Result(s) : For further details, please refer to following page (s)
Supersede/Referral : The test report supercedes previous report number, "F690101/LF-CTSAYAA15-47940" issued by SGS Korea Co., Ltd.

Result Summary :

Test Requested	Conclusion
1. Commission Regulation (EU) No 10/2011 and hence Article 3 of European Regulation No. 1935/2004.	-
a) Plastic – Overall Migration	PASS
b) Plastic – Specific Migration of Heavy Metals	PASS
c) Plastic- Specific Migration of Bisphenol A	PASS
2. German Food, Articles of Daily Use and Feed Code of September 1, 2005(LFGB), Section 31	-
a) Sensorial examination odour and taste test	PASS

SGS Korea Co., Ltd.

Jeff Jang / Chemical Lab manager

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Test Report

No. F690101/LF-CTSAYAA15-47940R1

Issued Date: 2015. 09. 25

Page 2 of 6

Sample No. : AYAA15-47940R1.001

Sample Description : Tension

Item / Part No. : N/A

Test result(s) :

1. European Commission Regulation (EU) No 10/2011

a) Plastic – Overall migration

Method: With reference to EN 1186-1:2002 for selection of conditions and test methods;

EN 1186-3:2002 aqueous food simulants by total immersion method;

Simulant Used	Test Condition	Result (mg/dm ²)	Detection Limit (mg/dm ²)	Permissible (mg/dm ²)
20% Ethanol(V/V) Aqueous Solution	70 °C for 2 hrs	N.D	3.0	10
Comment	--	PASS	--	--

Note : 1. mg/dm² = milligram per square decimeter

2. °C = degree Celsius

3. N.D = Not Detected

4. Permissible Limit is according to Commission Regulation (EU) No 10/2011 of January 2011 with amendments.

Remark:

1. Analytical tolerance of aqueous simulants is 1mg/dm² or 6mg/kg
2. Analytical tolerance of fatty food simulants is 3mg/dm² or 20mg/kg
3. Test condition & simulant were specified by client.

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Test Report

No. F690101/LF-CTSAYAA15-47940R1

Issued Date: 2015. 09. 25

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Sample No. : AYAA15-47940R1.001

Sample Description : Tension

Item / Part No. : N/A

b) Plastic – Specific migration of Heavy metals

Method: With reference to EN 13130-1:2004. Analysis was performed by ICP-MS / ICP-OES.

Simulant Used: 3 % acetic acid (w/v) in aqueous solution

Test Condition: 70 °C for 2 hrs

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible (mg/kg)
Specific Migration of Barium	N.D	0.3	1
Specific Migration of Cobalt	N.D	0.01	0.05
Specific Migration of Copper	N.D	0.3	5
Specific Migration of Iron	N.D	0.3	48
Specific Migration of Lithium	N.D	0.5	0.6
Specific Migration of Manganese	N.D	0.3	0.6
Specific Migration of Zinc	N.D	0.5	25
Comment	PASS	--	--

Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. °C = degree Celsius

3.N.D -= Not Detected.

4.Permissible Limit is according to Commission Regulation (EU) No 10/2011 of January 2011 with amendments.

Remark : 1. Test condition & simulant were specified by client

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Test Report

No. F690101/LF-CTSAYAA15-47940R1

Issued Date: 2015. 09. 25

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Sample No. : AYAA15-47940R1.001

Sample Description : Tension

Item / Part No. : N/A

c) Specific Migration of Bisphenol A

Method: With reference to CEN/TS 13130-13:2005. Analysis was performed by HPLC

Simulant Used: 3 % acetic acid (w/v) in aqueous solution

Test Condition: 70 °C for 2 hrs

Test items	Result (mg/kg)	Detection Limit (mg/kg)	Permissible Limit(mg/kg)
Specific Migration of Bisphenol A	N.D	0.5	0.6
Comment	PASS	--	--

Note : 1. mg/kg = milligram per kilogram of foodstuff in contact with

2. ND = Not Detected

3. Permissible limit is with reference to Commission Regulation (EU) 10/2011.

Remark:

4. Test condition & simulant were specified by client.

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Test Report

No. F690101/LF-CTSAYAA15-47940R1

Issued Date: 2015. 09. 25

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Sample No. : AYAA15-47940R1.001

Sample Description : Tension

Item / Part No. : N/A

2. In accordance with German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB) with its amendment, Section 30 and 31, and article 3 of EU Regulation (EC) No 1935/2004

a) Sensorial examination of odour and taste

Test Method: With reference to DIN10955: 2004

Migration condition: 70 °C for 2 hrs

Test Simulant: Water

The number of panelists: 6

Test Results :

Test Simulant	Test Item	Result	Maximum Permissible Limit
Water	Sensorial examination odour	0.5	2.5
	Sensorial examination taste	1.0	2.5
Comment		PASS	--

Note : 1. Intensity scale (rounded at 0.5):

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

2. Permissible Limit is according to LFGB with its amendment, Section 30 and 31, and Regulation (EC) No 1935/2004 of The European Parliament and of the Council of 27 October 2004.

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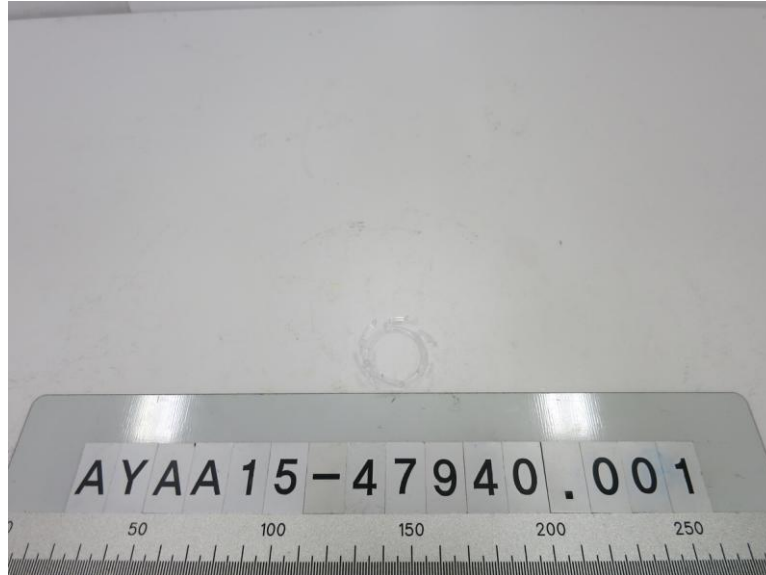
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Picture of Samples as Received:



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