

LOTTE CHEMICAL CORPORATION
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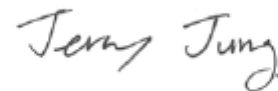


The following sample(s) was/were submitted and identified by/on behalf of the client as:-

SGS File No. : AYAA18-40703
Product Name : Lotte Chemical Polycarbonate
Item No./Part No. : PC-1100
Received Date : 2018. 07. 18
Test Period : 2018. 07. 18 to 2018. 08. 27
Test Result(s) : For further details, please refer to following page (s)

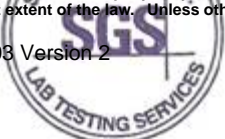
Test Requested	Conclusion
1. Commission Regulation (EU) No 10/2011 with Amendments and Article 3 of European Regulation No. 1935/2004.	-
a) Plastic – Overall Migration	PASS
b) Plastic – Specific Migration of Heavy Metals	PASS
c) Plastic- Specific Migration of Bisphenol A	PASS
d) Plastic – Specific Migration of Primary Aromatic Amine	PASS
2. German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 & 31 with Amendments.	-
a) Sensorial examination odour and taste test	PASS

SGS KOREA CO., LTD.



Jerry Jung/Technical Manager

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Test Report

No. F690101/LF-CTSAYAA18-40703

Issued Date: 2018. 08. 27

Page 2 of 7

Sample No. : AYAA18-40703.001
Sample Description : Lotte Chemical Polycarbonate
Item / Part No. : PC-1100
Material : Polycarbonate

Test result(s) :

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

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;

EN 1186-14:2002 Substitute test

Simulant Used	Test Condition	Result (mg/dm ²)	Detection Limit (mg/dm ²)	Permissible (mg/dm ²)
3% Acetic Acid(W/V) Aqueous Solution	40 °C for 10 days	N.D	3.0	10
95% Ethanol(V/V) Aqueous Solution	40 °C for 10 days	N.D	3.0	10
Isooctane	20 °C for 2 days	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-CTSAYAA18-40703

Issued Date: 2018. 08. 27

Page 3 of 7

Sample No. : AYAA18-40703.001
Sample Description : Lotte Chemical Polycarbonate
Item / Part No. : PC-1100
Material : Polycarbonate

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: 40 °C for 10 days

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	5
Specific Migration of Aluminium	N.D	0.1	1
Specific Migration of Nickel	N.D	0.02	0.02
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-CTSAYAA18-40703

Issued Date: 2018. 08. 27

Page 4 of 7

Sample No. : AYAA18-40703.001
Sample Description : Lotte Chemical Polycarbonate
Item / Part No. : PC-1100
Material : Polycarbonate

c) Specific Migration of Bisphenol A

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

Test Condition: 40 °C for 10 days

Test items	Result (mg/kg)	Detection Limit (mg/kg)	Permissible Limit(mg/kg)
Specific Migration of Bisphenol A (3% acetic acid) (w/v) in aqueous solution	N.D	0.01	0.05
Specific Migration of Bisphenol A (95% Ethanol) (V/V) in aqueous solution	0.01	0.01	0.05
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 & simulat were specified by client.

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Test Report

No. F690101/LF-CTSAYAA18-40703

Issued Date: 2018. 08. 27

Page 5 of 7

Sample No. : AYAA18-40703.001
Sample Description : Lotte Chemical Polycarbonate
Item / Part No. : PC-1100
Material : Polycarbonate

d) Specific Migration of Primary Aromatic Amine

Method: With reference to EN 13130-1:2004. Analysis was performed by UV-vis Spectrophotometer.

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

Test Condition: 40 °C for 10 days

Test Item	Result (mg/kg)	Reporting Limit (mg/kg)	Permissible Limit (mg/kg)
Specific migration of Primary Aromatic Amine	N.D	0.002	0.01
Comment	PASS	--	--

- Note:
1. mg/kg = milligram per kilogram of foodstuff in contact with
 2. °C = degree Celsius
 3. ND = Not Detected
 4. Permissible Limit is according to Commission Regulation (EU) No 10/2011 of 14 January 2011 with amendments.

Remark:

1. Test condition & simulant were specified by client.

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Sample No. : AYAA18-40703.001
Sample Description : Lotte Chemical Polycarbonate
Item / Part No. : PC-1100
Material : Polycarbonate

2. German Food, Articles of Daily Use and Feed Code of September 1, 2005 (LFGB), Section 30 & 31 with Amendments

a) Sensorial examination of odour and taste

Test Method: With reference to DIN10955: 2004

Migration condition: 40 °C for 10 days

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	--

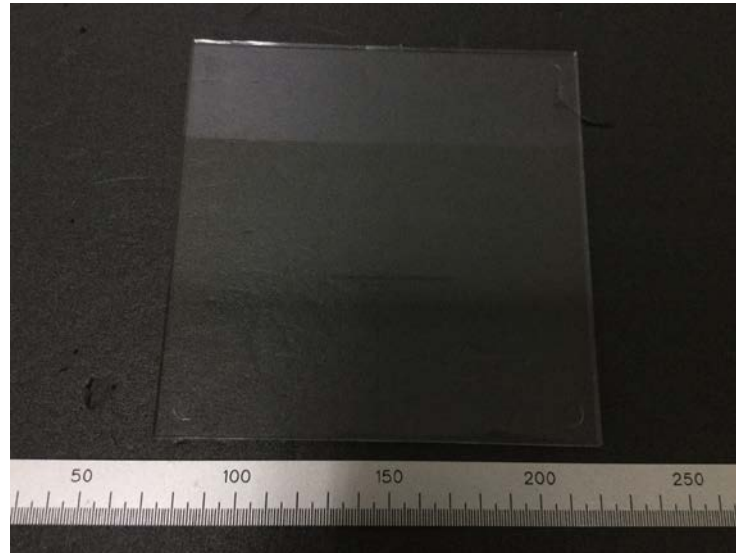
Note : 1. Intensity scale (rounded at 0.5):

- 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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Picture of Samples as Received:



AYAA18-40703.001

*** End of Report ***

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