

SGS INSTITUT FRESENIUS GmbH • Postfach 1261 • 65220 Taunusstein

K.P. TECH CO., LTD
37, Simigok-ro, Idong-myeon, Cheoin-gu, Yongin-si
KR-Gyeonggi-do

Claas Isemer / nt
Project Manager Hardlines
Tel.: +49 6128 744-562, Fax: +49 6128 744-534
claas.isemer@sgs.com
Consumer and Retail
Non food

Taunusstein, 17/02/2017

Test-report no. 3255840
Test-report version < 2 >

This test report replaces test report 3255840 version <1> of 16/02/2017.

Original Sample ID	Sample Description	Sample Receipt Date
170059739	PVC Sheet	18/01/2017

General Information

SGS-Client's ID	:	10008109
SGS-Customer-Order	:	4024839
Ordering date	:	13/01/2017
Testing period	:	19/01/2017 – 10/02/2017
Order No.	:	AYAA17-04017
Testing scope	:	Test according to client's requirements


Assessment

Overall assessment	pass
The sample meets the requirements of LFGB and Regulation (EC) No. 1935/2004 in the tested items.	

SGS INSTITUT FRESENIUS GmbH



i. A. Zamien Sarkardeh
(Project Manager)



i. A. Claas Isemer
(Project Manager)

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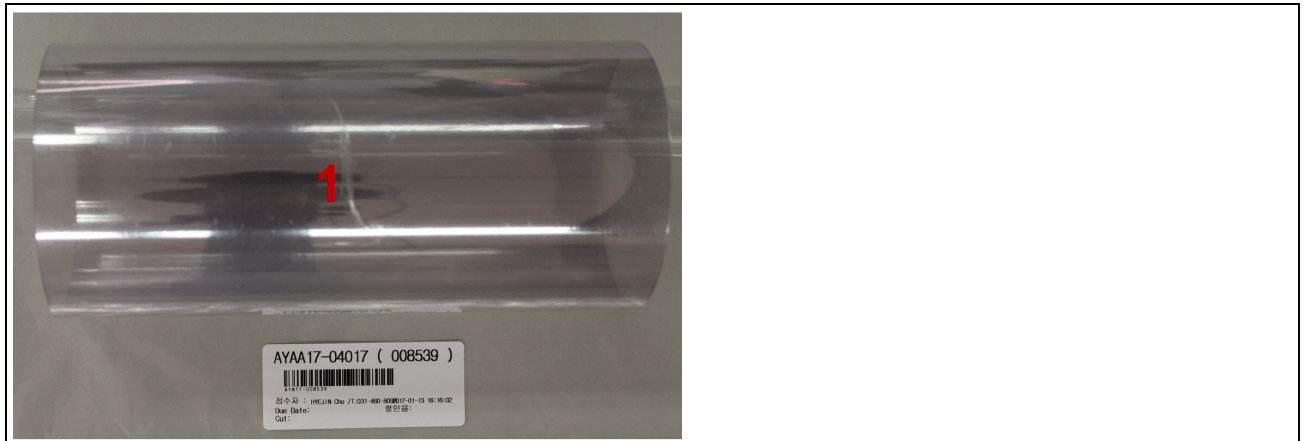
Summary of results

Test	Result
Sensory test	pass
Overall migration	pass
Specific migration of metals according to Regulation (EU) No 10/2011	pass
Specific migration of plasticizers	pass
Specific migration of vinyl chloride (Ref. No:26050, CAS No: 75-01-4)	pass

Note:

Conclusions on pass/fail are based on the test result from the actual sampling of the received sample(s).
 Conclusions are based on the relevant requirements; measurement uncertainties are not taken into account. Only results above the relevant detection limit are taken into account for the calculation of sums.
 Test was conducted on composite of random parts of the item as per client's request and the test result is the overall result.
 The composite sampling method is based on the client's special request and could be a modification from the testing standard.
 For 2-composite mix with results exceeding one half of the relevant requirements or 3-composite mix with results exceeding one third of the relevant requirements, the composite sample may have the possibility of one or more components that can lead to a failure result, it is recommended to test on individual basis.

Photo documentation



List of sample parts

Comp. no	Component-ID	Sample-Description	Original Sample ID
1	-	PVC sheet	170059739

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Analytical results

Sensory test

Test Method

DIN 10955:2004-06

simulant	cookie
duration	10 days
temperature	20 +/- 2°C

<u>Subsample(s)</u>	<u>Unit</u>	<u>Result</u>
		1
		1st contact
Median Odour ^[1]		0
Median Taste ^[1]		0
Conclusion		Pass

Note:

Key:	0	=	no change
	1	=	very slight off odour / off-taste
	2	=	slight off- odour / off-taste
	3	=	distinct off- odour / off-taste
	4	=	strong off-odour/ off-taste

Requirement: With an assessment from 0 to 2.5 there is no, respectively a tolerable organoleptic impact existent in terms of Regulation (EC) No 1935/2004.

^[1]Median rounded at 0.5 grades

Overall migration

Test Method

DIN EN 1186-13:2002-12

simulant	tenax
duration	10 days
temperature	40 +/- 2°C
approach	4 g/dm ²

<u>Subsample(s)</u>	<u>Unit</u>	<u>Result</u>
		1
		1st contact
overall migration	mg/dm ²	3
Conclusion		Pass

Note:

Requirement: max. 10 mg/dm² (Regulation (EU) No 10/2011)

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Specific migration of metals according to Regulation (EU) No 10/2011

Test Method

DIN-EN-ISO 11885 , after migration DIN 13130-1

simulant	3% acetic acid
duration	10 days
temperature	40 +/- 2°C
approach	6 dm²/L

<u>Subsample(s)</u>	<u>Unit</u>	<u>Result</u>
		1
		1st contact
Barium (Ba)	mg/kg	< 0.1
Cobalt (Co)	mg/kg	< 0.01
Iron (Fe)	mg/kg	< 1.0
Copper (Cu)	mg/kg	< 0.5
Lithium (Li)	mg/kg	< 0.1
Manganese (Mn)	mg/kg	< 0.1
Zinc (Zn)	mg/kg	< 1.0
Aluminum (Al)	mg/kg	< 0.1
Conclusion		Pass

Note:

Requirement:	Regulation (EU) No 10/2011	Aluminium	max. 1 mg/kg food simulant (valid from 14/09/2018)
		Barium:	max 1 mg/kg food simulant
		Cobalt:	max. 0.05 mg/kg food simulant
		Copper:	max. 5 mg/kg food simulant
		Iron:	max. 48 mg/kg food simulant
		Lithium:	max. 0.6 mg/kg food simulant
		Manganese:	max .0.6 mg/kg food simulant
		Zinc:	max. 25 mg/kg food simulant (max. 5 mg/kg food simulant from 14/09/2018)

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Specific migration of plasticizers

Test Method

Migration: DIN 13130-1; measurement: GC-MS

simulant	95% acetic acid
duration	10 days
temperature	40 +/- 2°C
approach	6 dm ² /L

<u>Subsample(s)</u>	<u>Unit</u>	<u>Result</u> <u>1</u> 1 st Contact
Triethyl citrate (TEC) (77-93-0)	mg/kg food simulant	< 0.05
Diallylphthalate (DALLP) (131-17-9)	mg/kg food simulant	< 0.01
Dibutylphthalate (DBP) (84-74-2)	mg/kg food simulant	< 0.05
Dibutylsebacate (DBS) (109-43-3)	mg/kg food simulant	< 0.05
Tributylacetyl citrate (TBAC) (77-90-7)	mg/kg food simulant	< 0.05
Di-(2-ethylhexyl) adipate (DEHA) (103-23-1)	mg/kg food simulant	< 0.05
Bis-(2-ethylhexyl) phthalate (DEHP) (117-81-7)	mg/kg food simulant	< 0.05
Benzylbutylphthalate (BBP) (85-68-7)	mg/kg food simulant	< 0.05
Di-(2-ethylhexyl) terephthalate (DEHT) (6422-86-2)	mg/kg food simulant	< 0.05
Di-iso-nonylcyclohexyldicarboxylate (DINCH) (166412-78-8)	mg/kg food simulant	< 0.05
Phthalic acid, di-ester with primary saturated C8-C11-dentrited alcohols, above 60 % C9 (DINP) (28553-12-0)	mg/kg food simulant	< 0.05
Phthalic acid, di-ester with primary saturated C9-C11-dentrited alcohols, above 90 % C10 (DIDP) (26761-40-0)	mg/kg food simulant	< 0.05
Conclusion		pass

Requirement:	Regulation (EU) No 10/2011:	TEC:	max. 60 mg/kg food simulant ^a
		DALLP:	< 0.01 mg/kg food simulant
		DBP:	max. 0.3 mg/kg food simulant
		DBS:	max. 60 mg/kg food simulant ^a
		TBAC:	max. 60 mg/kg food simulant ^a
		DEHA:	max. 18 mg/kg food simulant
		DEHP:	max. 1.5 mg/kg food simulant
		BBP:	max. 30 mg/kg food simulant
		DEHT:	max. 60 mg/kg food simulant ^a
		DINCH:	max. 60 mg/kg food simulant ^a
		DINP + DIDP:	Sum: max. 9 mg/kg food simulant

^a Sum of all plasticizers

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Specific migration of vinyl chloride (Ref. No: 26050, CAS No: 75-01-4)

Test Method

Migration: DIN 13130-1; measurement: Headspace GC-MS

simulant	95% ethanol
duration	10 days
temperature	40 +/- 2°C
approach	6 dm ² /L

<u>Subsample(s)</u>	<u>Unit</u>	<u>Result</u>
		1
		1 st contact
vinyl chloride (75-01-4)	mg/kg	< 0.1
Conclusion		Pass

Note:

Requirement: not detectable (< 0.1 mg/kg food simulant) (Regulation (EU) No 10/2011)

*** End of test report ***