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Oldenburg, 23.05.2016

Test report BA 18078

Date of order: 17.03.2016
 Receipt of sample: 18.03.2016
 Period of testing: 23.03.2016 - 23.05.2016

We received the following sample/s for testing.

Innoform sample no.	description/ designation given by client	sample type/ sample size	sample packed in
120556	Sample No 1003169 – 10005002; Description PP Woven bag	1 bag(s) approx. 610 x 1000 mm	cardboard box
120557	Sample No 1003169 – 10004930; Description PP Woven bag	1 bag(s) approx. 460 x 755 mm	cardboard box
120558	Sample No 1003169 – 10007656; Description PP Woven bag Printed	1 bag(s) approx. 455 x 700 mm	cardboard box
120559	Sample No 1003169 – 10011075; Description PP Woven bag Coloured	1 bag(s) approx. 1175 x 2010 mm	cardboard box
120560	Sample No 1003169 – 10005009; Description PP Woven bag with Liner	1 bag(s) approx. 595 x 1100 mm	cardboard box

1 Task

- Overall Migration with simulant A (ethanol 10% (v/v)), B (acetic acid 3% (w/v)), D2 (vegetable oil) and E (poly(2,6-diphenyl-p-phenylenoxide) (Tenax ®)), testing conditions 10 days at 40°C
- Heavy Metals

2 Overall Migration Reg. (EU) No 10/ 2011

Migration testing according to Regulation (EU) No. 10/ 2011 "on plastic materials and articles intended to come into contact with food" and the requirements of the standard EN 1186-1 ff. "Materials and articles in contact with foodstuffs – Plastics".

In Regulation (EU) No. 10/ 2011 the following overall migration limits (OML) are set:

- **10 mg / dm²** of food contact surface
- **60 mg / kg** food or food simulant (for materials intended for the contact with food for infants and young children)

To demonstrate compliance with the overall migration limit for all type of foods testing in food simulant A (Ethanol 10%) and food simulant B (Acetic Acid 3%) and simulant D2 (Vegetable Oil) shall be performed.

2.1 results

test standard	DIN EN 1186-1 till 9 ▲
Innoform SOP	046
test conditions	OM2: 10 days at 40°C
intended food contact conditions	Any long term storage at room temperature or below, including heating up to 70 °C for up to 2 hours, or heating up to 100 °C for up to 15 minutes. Test OM 2 covers also food contact conditions described for OM1 and OM3.
repeated use article	no
food simulant	A (Ethanol 10% (v/v))
testing modus	Sample 120556-120559: full immersion Sample 120560: cell
test area	Sample 120556-120559: 1 dm ² (sample size 1 dm ²) Sample 120560: 0,5 dm ²
simulant (amount/volume)	Sample 120556-120559: 100 ml Sample 120560: 25 ml

Innoform sample no. description/ designation given by client	dimension	mean value	single value 1	single value 2	single value 3	limit
120556 (Sample No 1003169 – 10005002; Description PP Woven bag)	mg/dm ² packaging	1,9	1,8	2,1	1,8	compliant
120557 (Sample No 1003169 – 10004930; Description PP Woven bag)	mg/dm ² packaging	2,1	2,0	2,2	2,1	compliant
120558 (Sample No 1003169 – 10007656; Description PP Woven bag Printed)	mg/dm ² packaging	2,4	2,4	2,3	2,5	compliant
120559 (Sample No 1003169 – 10011075; Description PP Woven bag Coloured)	mg/dm ² packaging	2,7	2,7	2,6	2,7	compliant
120560 (Sample No 1003169 – 10005009; Description PP Woven bag with Liner)	mg/dm ² packaging	< 1,0	< 1,0	< 1,0	< 1,0	compliant

food simulant

B (Acetic Acid 3% (w/v))

testing modus

Sample 120556-120559: full immersion

Sample 120560: cell

test area

Sample 120556-120559: 1 dm² (sample size 1 dm²)

Sample 120560: 0,5 dm²

simulant (amount/volume)

Sample 120556-120559: 100 ml

Sample 120560: 25 ml

Innoform sample no. description/ designation given by client	dimension	mean value	single value 1	single value 2	single value 3	limit
120556 (Sample No 1003169 – 10005002; Description PP Woven bag)	mg/dm ² packaging	162	165	195	126	exceeded
120557 (Sample No 1003169 – 10004930; Description PP Woven bag)	mg/dm ² packaging	113	115	111	112	exceeded
120558 (Sample No 1003169 – 10007656; Description PP Woven bag Printed)	mg/dm ² packaging	147	139	147	153	exceeded
120559 (Sample No 1003169 – 10011075; Description PP Woven bag Coloured)	mg/dm ² packaging	28	27	28	28	exceeded
120560 (Sample No 1003169 – 10005009; Description PP Woven bag with Liner)	mg/dm ² packaging	9,0	9,0	9,1	9,0	compliant

Further notes see ¹

¹ The acetic acid can react with e.g. calcium carbonate of the net material. Therefore, the results fluctuate more than the allowable analytical tolerance.

food simulant	Sample 120556-120558: D2 (Vegetable Oil -Sunflower Oil)
	Sample 120559-120560: D2 (Vegetable Oil- Olive Oil)
testing modus	Sample 120556-120559: full immersion
	Sample 120560: cell
test area	1 dm ²
simulant (amount/volume)	Sample 120556, 120557, 120559: 100 ml
	Sample 120558, 120560: 50 ml

Innoform sample no. description/ designation given by client	dimension	mean value	single value 1	single value 2	single value 3	limit
120556 (Sample No 1003169 – 10005002; Description PP Woven bag)	mg/dm ² packaging	< 3,0 ²	< 3,0 ²	< 3,0 ²	< 3,0 ²	compliant
120557 (Sample No 1003169 – 10004930; Description PP Woven bag)	mg/dm ² packaging	<3,0 ²	<3,0 ²	<3,0 ²	3,8 ²	compliant
120558 (Sample No 1003169 – 10007656; Description PP Woven bag Printed)	mg/dm ² packaging	7,8 ²	9,8 ²	6,5 ²	7,0 ²	compliant
120559 (Sample No 1003169 – 10011075; Description PP Woven bag Coloured)	mg/dm ² packaging	<3,0	<3,0	<3,0	<3,0	compliant
120560 (Sample No 1003169 – 10005009; Description PP Woven bag with Liner)	<p>The migration test using the fatty food simulants is not feasible for technical reasons connected with the method of analysis: - difficulties to recover the absorbed oil (results negative).</p> <p>According to Directive 82/711/EEC, which was used until 31 December 2015 'Substitute tests' which use the 'test media' under the 'conventional substitute test conditions' as set out in Chapter III of Directive 82/711/EEC should be carried out.</p> <p>According leaflet no. 110/2013, issued by the Industrial Association of Food Technology and Packaging eV (IVLV) in October 2013, the conditions defined in Directive 82/711 / EEC should be used until further notice, as the European Commission didn't have established any detailed regulations in this regard.</p> <p>Results please see 2.2</p>					

² The samples contained, according to the preliminary gas chromatographic analysis, components that interfered with the analysis so that the result is based solely on an evaluation of the undisturbed methyl ester.

food simulant E (Poly(2,6-diphenyl-p-phenylenoxide (Tenax ®))
test standard based on DIN EN 14338 or DIN EN 1186-13 ▲
testing modus petri dish
test area 0,93 dm²
simulant (amount/volume) 3,7 g

Innoform sample no. description/ designation given by client	dimension	mean value	single value 1	single value 2	single value 3	limit
120556 (Sample No 1003169 – 10005002; Description PP Woven bag)	mg/dm ² packaging	< 1,0	< 1,0	< 1,0	< 1,0	compliant
120557 (Sample No 1003169 – 10004930; Description PP Woven bag)	mg/dm ² packaging	< 1,0	< 1,0	< 1,0	< 1,0	compliant
120558 (Sample No 1003169 – 10007656; Description PP Woven bag Printed)	mg/dm ² packaging	< 1,0	< 1,0	1,1	< 1,0	compliant
120559 (Sample No 1003169 – 10011075; Description PP Woven bag Coloured)	mg/dm ² packaging	< 1,0	< 1,0	< 1,0	< 1,0	compliant
120560 (Sample No 1003169 – 10005009; Description PP Woven bag with Liner)	mg/dm ² packaging	< 1,0	< 1,0	< 1,0	< 1,0	compliant

2.2 results substitute tests

test standard DIN EN 1186-14 (substitute test) testiing conditions acc. IVLV leaflet
 no. 110/2013 or Directive 82/711/ECC) ▲
Innoform SOP 046
food simulant Ethanol 95% (v/v) *1
test conditions 10 days at 40°C
testing modus cell
test area 0,5 dm²
simulant (amount/volume) 25 ml

Innoform sample no. description/ designation given by client	dimension	mean value	single value 1	single value 2	single value 3	limit
120560 (Sample No 1003169 – 10005009; Description PP Woven bag with Liner)	mg/dm ² packaging	< 1,0	< 1,0	< 1,0	< 1,0	compliant

food simulant	Isooctan
test conditions	2 days at 20°C (corresponds to 10days at 40°C with simulant D2 according to Directive 82/711/ECC)
testing modus	cell
test area	0,5 dm ²
simulant (amount/volume)	25 ml

Innoform sample no. description/ designation given by client	dimension	mean value	single value 1	single value 2	single value 3	limit
120560 (Sample No 1003169 – 10005009; Description PP Woven bag with Liner)	mg/dm ² packaging	< 1,0	< 1,0	< 1,0	< 1,0	compliant

3 Heavy metals

3.1 testing parameters

test standard	elements according directive 94/62/EG,Θ
limit	according EC-Directive 94/62/EC total amount 100 mg/kg
type of test	quantitative analysis (content determination)
dimension	mg/kg packaging
test method	ICP-MS after pulping by microwave
limit of quantification (LQ) [mg/kg]	0,1

3.1.1 Heavy metals [mg/kg packaging]

Sample 120556 (Sample No 1003169 – 10005002; Description PP Woven bag)	CAS no.	measured value
lead (Pb)	0007439-92-1	0,2
mercury (Hg)	0007439-97-6	< 0,1 (< LQ)
cadmium (Cd)	0007440-43-9	< 0,1 (< LQ)
chromium (Cr)	0007440-47-3	0,7

Sample 120557 (Sample No 1003169 – 10004930; Description PP Woven bag)	CAS no.	measured value
lead (Pb)	0007439-92-1	0,6
mercury (Hg)	0007439-97-6	< 0,1 (< LQ)
cadmium (Cd)	0007440-43-9	< 0,1 (< LQ)
chromium (Cr)	0007440-47-3	0,7

Sample 120558 (Sample No 1003169 – 10007656; Description PP Woven bag Printed)	CAS no.	measured value
lead (Pb)	0007439-92-1	3
mercury (Hg)	0007439-97-6	< 0,1 (< LQ)
cadmium (Cd)	0007440-43-9	< 0,1 (< LQ)
chromium (Cr)	0007440-47-3	1,1

Sample 120559 (Sample No 1003169 – 10011075; Description PP Woven bag Coloured)	CAS no.	measured value
lead (Pb)	0007439-92-1	0,1
mercury (Hg)	0007439-97-6	< 0,1 (< LQ)
cadmium (Cd)	0007440-43-9	3,8
chromium (Cr)	0007440-47-3	0,2

Sample 120560 (Sample No 1003169 – 10005009; Description PP Woven bag with Liner)	CAS no.	measured value
lead (Pb)	0007439-92-1	0,2
mercury (Hg)	0007439-97-6	< 0,1 (< LQ)
cadmium (Cd)	0007440-43-9	< 0,1 (< LQ)
chromium (Cr)	0007440-47-3	0,4

For the calculation of the results the amount of Chromium total (incl. Cr (VI)) was considered.

notes for sml measurements	
LQ limit of quantification	LD limit of detection

Kind regards



Heike Schwertke
Innoform GmbH
Testservice



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