

IBI-International Bag Industry A/S

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Date November 20, 2020
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Order No.: 55269268

Test Report No.: PB2008779

Version 1

Client: IBI-International Bag Industry A/S

Strandelhjorn Bygade 15
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DENMARK

Date of order: 13.10.2020

Sample received: 22.10.2020

Testing Period: 22.10.2020 – 20.11.2020

Test item: Foils (PE) – different colours

Scope of investigation: Food contact testing (EU)

Result: **PASS**

Test Result: - following page / pages -

Accredited Analytical Laboratory D-PL-11060-03-00 in Stuttgart and Halle (Saale)

Description of test samples:

Sample No.:	Sample designation:	Photo of samples
55269268 001	Foil, white	
55269268 002	Foil, yellow	
55269268 003	Foil, green	
55269268 004	Foil, blue	
55269268 005	Foil, red	

The samples are, in accordance to article 1 subsection 2 of the regulation (EC) 1935/2004, commodities because it is intended and foreseen to come into contact with foodstuff.

Test results**I) 55269268 001 Foil, white:****Sensorical examination:**

Sample No.:	55269268 001	
Sample designation:	Foil, white	
Parameter	Result	Limit
Sensorical test ^{1,2}		
Sensorical test - smell	0	< 3
Sensorical test - taste	0	

¹ Scale of intensity:

- 0 - no noticeable change of smell and taste
- 1 - marginal change of smell and taste
- 2 - slight change of smell and taste
- 3 - clear change of smell and taste
- 4 - strong change of smell and taste

² Test conditions: drinking water, 30 minutes, 40 °C

According to article 3 subsection 1 c of the regulation (EC) 1935/2004 materials and articles shall be manufactured in compliance with good manufacturing practise so that, under normal or foreseeable conditions of use, they do not transfer their constituents to food in quantities which could bring about a deterioration in the organoleptic characteristics thereof.

The tested sample meets this requirement.

Overall migration

Sample No.:	55269268 001			
Sample designation:	Foil, white			
Parameter	Unit	Result	LQ	Limit
Overall migration ^{1,2} Simulant: 10 % ethanol	mg/ dm ²	0,7	0,5	10
Overall migration ^{1,2} Simulant: 3 % acetic acid	mg/ dm ²	< LQ	0,5	10
Overall migration ^{1,3} Simulant: oil	mg/ dm ²	< LQ	5	10

¹ Test conditions: 30 minutes, 40 °C, first migration

² surface area: 100 cm²; volume: 170 ml, O/V: 5,8:1

³ O/V: 6:1

According to article 12 (1) of the Regulation (EU) 10/2011 plastic materials and articles shall not transfer their constituents to food simulants in quantities exceeding 10 milligrams per dm².
The tested sample meets this requirement for the first test of the tested simulants.

Specific migration of metals:

Sample No.:	55269268 001			
Sample designation:	Foil, white			
Parameter	Unit	Result	LQ	Limit
Specific migration of metals ⁴				
Aluminium (Al)	mg/ kg	< LQ	0,1	1
Ammonium (NH ₄)	mg/ kg	< LQ *	10	60
Antimony (Sb)	mg/ kg	< LQ	0,01	0,04
Arsenic (As)	mg/ kg	0,003	0,001	ND (0,01)
Barium (Ba)	mg/ kg	< LQ	0,01	1
Cadmium (Cd)	mg/ kg	< LQ	0,001	ND (0,01) / LOD 0,002
Calcium (Ca)	mg/ kg	< LQ *	10	60
Chromium (Cr)	mg/ kg	< LQ	0,001	ND (0,01)
Cobalt (Co)	mg/ kg	< LQ	0,01	0,05
Copper (Cu)	mg/ kg	< LQ	0,01	5
Europium (Eu), Gadolinium (Gd), Lanthanum (La), Terbium (Tb)	mg/ kg	< LQ	0,01	0,05
Iron (Fe)	mg/ kg	< LQ	0,1	48
Lead (Pb)	mg/ kg	< LQ	0,001	ND (0,01)
Lithium (Li)	mg/ kg	< LQ	0,01	0,6
Magnesium (Mg)	mg/ kg	< LQ *	10	60
Manganese (Mn)	mg/ kg	< LQ	0,01	0,6
Mercury (Hg)	mg/ kg	< LQ	0,001	ND (0,01)
Nickel (Ni)	mg/ kg	< LQ	0,01	0,02
Potassium (K)	mg/ kg	< LQ *	10	60
Sodium (Na)	mg/ kg	< LQ *	10	60
Zinc (Zn)	mg/ kg	< LQ	0,1	5

Test conditions: 3% acetic acid, 30 minutes, 40 °C, first migration

* was evaluated on the result of the corresponding analysis of the global migration; ND: not detectable

The tested sample meets the limit values for the migration of metals according to annex II of the Regulation (EU) 10/2011 on plastic materials and articles intended to come into contact with food.

Primary aromatic amines:

Sample No.:	55269268 001			
Sample designation:	Foil, white			
Parameter	Unit	Result	LQ	Limit
Primary aromatic amines	mg/ kg	< LQ	0,002	0,01

Test conditions: 3% acetic acid, 30 minues, 40 °C, first migration

According Annex II of Reg. 10/2011 (09_2020) primary aromatic amines listed in entry 43 to Appendix 8 of Annex XVII to Reg. (EC) No 1907/2006 and for which no migration limit is specified in Table 1 of Annex I shall not migrate or shall not otherwise be released from plastic materials and articles into food/ food simulant.

In accordance with Article 11(4) they shall not be detectable with a limit of detection of 0,002 mg/kg food/ food simulant applied to each individual primary aromatic amine.

For primary aromatic amines, not listed in entry 43 to Appendix 8 of Annex XVII to Reg (EC) No 1907/2006, but for which no specific migration limit is specified in Annex I the sum shall not exceed 0,01 mg/kg in food or food simulant.

The tested sample meets this requirement.

NIAS-screening:

Sample No.:	55269268 001				
Sample designation:	Foil, white				
Parameter	Unit	Result	LQ	Limit	
NIAS-Screening (non intentional added substances) ¹					
Fatty acid ester	mg/ kg	0,024	0,017	-	
	mg/ dm ²	0,0041	0,0029		
Erucic acid ester (CAS 112-84-5)	mg/ kg	0,23	0,017		
	mg/ dm ²	0,038	0,0029		
Sum	mg/ kg	0,25	-		60
	mg/ dm ²	0,042	-		-
4-tert-butylphenol (CAS 95-54-4)	mg/ kg	0,021	0,017	0,05	
	mg/ dm ²	0,0036	0,0029	-	
Irganox 1076 (Octadecyl- 3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate) (CAS 2082-79-3)	mg/ kg	0,026	0,017	6	
	mg/ dm ²	0,0043	0,0029	-	

¹ Test conditions: 95 % Ethanol, 30 minutes, 40 °C, first migration, 1 dm² / 170 mL simulant

Phthalates:

Sample No.:	55269268 001			
Sample designation:	Foil, white			
Parameter	Unit	Result	LQ	Limit
Phthalates				
Dimethylphthalate (DMP)	mg/ kg	< LQ	5	-
Diethylphthalate (DEP)	mg/ kg	< LQ	5	-
Diallylphthalate (DAP)	mg/ kg	< LQ	5	-
Dipropylphthalate (DPrP)	mg/ kg	< LQ	5	-
Diisobutylphthalate (DiBP)	mg/ kg	< LQ	5	1000
Dibutylphthalate (DBP)	mg/ kg	< LQ	5	1000
Dipentylphthalate (DPP)	mg/ kg	< LQ	5	-
Benzylbutylphthalate (BBP)	mg/ kg	< LQ	5	1000
Bis(2-ethylhexyl)phthalate (DEHP)	mg/ kg	< LQ	50	1000
Diheptylphthalate (DHeP)	mg/ kg	< LQ	50	-
Dicyclohexylphthalate (DCHP)	mg/ kg	< LQ	5	-
Diphenylphthalate (DPhP)	mg/ kg	< LQ	5	-
Di-n-octylphthalate (DnOP)	mg/ kg	< LQ	50	-
Didecylphthalate (DDP)	mg/ kg	< LQ	50	-
Diisooctylphthalate (DiOP)	mg/ kg	< LQ	50	-
Diisononylphthalate (DiNP)	mg/ kg	< LQ	50	1000
Diisodecylphthalate (DiDP)	mg/ kg	< LQ	50	1000
No other phthalates / isophthalates / adipates / terephthalates were detectable in a GC-MS screening in a concentration > 100 mg / kg (identification was done over m / z = 149)				

In the sample no phthalates were detected.

Heavy metals:

Sample No.:	55269268 001			
Sample designation:	Foil, white			
Parameter	Unit	Result	LQ	Limit
Heavy metals				
Cadmium	mg/kg	< LQ	2	100
Lead	mg/kg	< LQ	10	100

In the sample no cadmium and lead was detected.

Catalyst residues:

Sample No.:	55269268 001			
Sample designation:	Foil, white			
Parameter	Unit	Result	LQ	Limit
Catalyst residues				
Chromium	mg/kg	< LQ	2	10
Vanadium	mg/kg	< LQ	10	20
Zirconium	mg/kg	51	10	100
Hafnium	mg/kg	< LQ	10	100

According to BfR-recommendation III (Polyethylene) products shall not contain more than 10 ppm chromium, 20 ppm vanadium, 100 ppm zirconium and 100 ppm hafnium.
The sample keeps these limit values.

II) 55269268 002 Foil, yellow:
Specific migration of metals:

Sample No.:	55269268 002			
Sample designation:	Foil, yellow			
Parameter	Unit	Result	LQ	Limit
Specific migration of metals ⁴				
Aluminium (Al)	mg/ kg	< LQ	0,1	1
Ammonium (NH ₄)	mg/ kg	< LQ *	10	60
Antimony (Sb)	mg/ kg	< LQ	0,01	0,04
Arsenic (As)	mg/ kg	0,003	0,001	ND (0,01)
Barium (Ba)	mg/ kg	< LQ	0,01	1
Cadmium (Cd)	mg/ kg	< LQ	0,001	ND (0,01) / LOD 0,002
Calcium (Ca)	mg/ kg	< LQ *	10	60
Chromium (Cr)	mg/ kg	< LQ	0,001	ND (0,01)
Cobalt (Co)	mg/ kg	< LQ	0,01	0,05
Copper (Cu)	mg/ kg	< LQ	0,01	5
Europium (Eu), Gadolinium (Gd), Lanthanum (La), Terbium (Tb)	mg/ kg	< LQ	0,01	0,05
Iron (Fe)	mg/ kg	< LQ	0,1	48
Lead (Pb)	mg/ kg	< LQ	0,001	ND (0,01)
Lithium (Li)	mg/ kg	< LQ	0,01	0,6
Magnesium (Mg)	mg/ kg	< LQ *	10	60
Manganese (Mn)	mg/ kg	< LQ	0,01	0,6
Mercury (Hg)	mg/ kg	< LQ	0,001	ND (0,01)
Nickel (Ni)	mg/ kg	< LQ	0,01	0,02
Potassium (K)	mg/ kg	< LQ *	10	60
Sodium (Na)	mg/ kg	< LQ *	10	60
Zinc (Zn)	mg/ kg	< LQ	0,1	5

Test conditions: 3% acetic acid, 30 minutes, 40 °C, first migration

* was evaluated on the result of the corresponding analysis of the global migration; ND: not detectable

LQ: Limit of quantification

Worked out:

Person in charge:

 DEKRA Automobil GmbH – Handwerkstr. 17 – 70565 Stuttgart
 Alexandra Haußmann Phone 0711/ 7861-3705

The tested sample meets the limit values for the migration of metals according to annex II of the Regulation (EU) 10/2011 on plastic materials and articles intended to come into contact with food.

Primary aromatic amines:

Sample No.:	55269268 002			
Sample designation:	Foil, yellow			
Parameter	Unit	Result	LQ	Limit
Primary aromatic amines	mg/ kg	< LQ	0,002	0,01

Test conditions: 3% acetic acid, 30 minues, 40 °C, first migration

According Annex II of Reg. 10/2011 (09_2020) primary aromatic amines listed in entry 43 to Appendix 8 of Annex XVII to Reg. (EC) No 1907/2006 and for which no migration limit is specified in Table 1 of Annex I shall not migrate or shall not otherwise be released from plastic materials and articles into food/ food simulant.

In accordance with Article 11(4) they shall not be detectable with a limit of detection of 0,002 mg/kg food/ food simulant applied to each individual primary aromatic amine.

For primary aromatic amines, not listed in entry 43 to Appendix 8 of Annex XVII to Reg (EC) No 1907/2006, but for which no specific migration limit is specified in Annex I the sum shall not exceed 0,01 mg/kg in food or food simulant.

The tested sample meets this requirement.

III) 55269268 003 Foil, green:
Specific migration of metals:

Sample No.:	55269268 003			
Sample designation:	Foil, green			
Parameter	Unit	Result	LQ	Limit
Specific migration of metals ⁴				
Aluminium (Al)	mg/ kg	< LQ	0,1	1
Ammonium (NH ₄)	mg/ kg	< LQ *	10	60
Antimony (Sb)	mg/ kg	< LQ	0,01	0,04
Arsenic (As)	mg/ kg	0,002	0,001	ND (0,01)
Barium (Ba)	mg/ kg	< LQ	0,01	1
Cadmium (Cd)	mg/ kg	< LQ	0,001	ND (0,01) / LOD 0,002
Calcium (Ca)	mg/ kg	< LQ *	10	60
Chromium (Cr)	mg/ kg	< LQ	0,001	ND (0,01)
Cobalt (Co)	mg/ kg	< LQ	0,01	0,05
Copper (Cu)	mg/ kg	< LQ	0,01	5
Europium (Eu), Gadolinium (Gd), Lanthanum (La), Terbium (Tb)	mg/ kg	< LQ	0,01	0,05
Iron (Fe)	mg/ kg	< LQ	0,1	48
Lead (Pb)	mg/ kg	< LQ	0,001	ND (0,01)
Lithium (Li)	mg/ kg	< LQ	0,01	0,6
Magnesium (Mg)	mg/ kg	< LQ *	10	60
Manganese (Mn)	mg/ kg	< LQ	0,01	0,6
Mercury (Hg)	mg/ kg	< LQ	0,001	ND (0,01)
Nickel (Ni)	mg/ kg	< LQ	0,01	0,02
Potassium (K)	mg/ kg	< LQ *	10	60
Sodium (Na)	mg/ kg	< LQ *	10	60
Zinc (Zn)	mg/ kg	< LQ	0,1	5

Test conditions: 3% acetic acid, 30 minutes, 40 °C, first migration

* was evaluated on the result of the corresponding analysis of the global migration; ND: not detectable

LQ: Limit of quantification

 Worked out:
 Person in charge:

 DEKRA Automobil GmbH – Handwerkstr. 17 – 70565 Stuttgart
 Alexandra Haußmann Phone 0711/ 7861-3705

The tested sample meets the limit values for the migration of metals according to annex II of the Regulation (EU) 10/2011 on plastic materials and articles intended to come into contact with food.

Primary aromatic amines:

Sample No.:	55269268 003			
Sample designation:	Foil, green			
Parameter	Unit	Result	LQ	Limit
Primary aromatic amines	mg/ kg	< LQ	0,002	0,01

Test conditions: 3% acetic acid, 30 minues, 40 °C, first migration

According Annex II of Reg. 10/2011 (09_2020) primary aromatic amines listed in entry 43 to Appendix 8 of Annex XVII to Reg. (EC) No 1907/2006 and for which no migration limit is specified in Table 1 of Annex I shall not migrate or shall not otherwise be released from plastic materials and articles into food/ food simulant.

In accordance with Article 11(4) they shall not be detectable with a limit of detection of 0,002 mg/kg food/ food simulant applied to each individual primary aromatic amine.

For primary aromatic amines, not listed in entry 43 to Appendix 8 of Annex XVII to Reg (EC) No 1907/2006, but for which no specific migration limit is specified in Annex I the sum shall not exceed 0,01 mg/kg in food or food simulant.

The tested sample meets this requirement.

IV) 55269268 004 Foil, blue:
Specific migration of metals:

Sample No.:	55269268 004			
Sample designation:	Foil, blue			
Parameter	Unit	Result	LQ	Limit
Specific migration of metals ⁴				
Aluminium (Al)	mg/ kg	< LQ	0,1	1
Ammonium (NH ₄)	mg/ kg	< LQ *	10	60
Antimony (Sb)	mg/ kg	< LQ	0,01	0,04
Arsenic (As)	mg/ kg	0,002	0,001	ND (0,01)
Barium (Ba)	mg/ kg	< LQ	0,01	1
Cadmium (Cd)	mg/ kg	< LQ	0,001	ND (0,01) / LOD 0,002
Calcium (Ca)	mg/ kg	< LQ *	10	60
Chromium (Cr)	mg/ kg	< LQ	0,001	ND (0,01)
Cobalt (Co)	mg/ kg	< LQ	0,01	0,05
Copper (Cu)	mg/ kg	< LQ	0,01	5
Europium (Eu), Gadolinium (Gd), Lanthanum (La), Terbium (Tb)	mg/ kg	< LQ	0,01	0,05
Iron (Fe)	mg/ kg	< LQ	0,1	48
Lead (Pb)	mg/ kg	< LQ	0,001	ND (0,01)
Lithium (Li)	mg/ kg	< LQ	0,01	0,6
Magnesium (Mg)	mg/ kg	< LQ *	10	60
Manganese (Mn)	mg/ kg	< LQ	0,01	0,6
Mercury (Hg)	mg/ kg	< LQ	0,001	ND (0,01)
Nickel (Ni)	mg/ kg	< LQ	0,01	0,02
Potassium (K)	mg/ kg	< LQ *	10	60
Sodium (Na)	mg/ kg	< LQ *	10	60
Zinc (Zn)	mg/ kg	< LQ	0,1	5

Test conditions: 3% acetic acid, 30 minutes, 40 °C, first migration

* was evaluated on the result of the corresponding analysis of the global migration; ND: not detectable

LQ: Limit of quantification

Worked out:

Person in charge:

 DEKRA Automobil GmbH – Handwerkstr. 17 – 70565 Stuttgart
 Alexandra Haußmann Phone 0711/ 7861-3705

The tested sample meets the limit values for the migration of metals according to annex II of the Regulation (EU) 10/2011 on plastic materials and articles intended to come into contact with food.

Primary aromatic amines:

Sample No.:	55269268 004			
Sample designation:	Foil, blue			
Parameter	Unit	Result	LQ	Limit
Primary aromatic amines	mg/ kg	< LQ	0,002	0,01

Test conditions: 3% acetic acid, 30 minues, 40 °C, first migration

According Annex II of Reg. 10/2011 (09_2020) primary aromatic amines listed in entry 43 to Appendix 8 of Annex XVII to Reg. (EC) No 1907/2006 and for which no migration limit is specified in Table 1 of Annex I shall not migrate or shall not otherwise be released from plastic materials and articles into food/ food simulant.

In accordance with Article 11(4) they shall not be detectable with a limit of detection of 0,002 mg/kg food/ food simulant applied to each individual primary aromatic amine.

For primary aromatic amines, not listed in entry 43 to Appendix 8 of Annex XVII to Reg (EC) No 1907/2006, but for which no specific migration limit is specified in Annex I the sum shall not exceed 0,01 mg/kg in food or food simulant.

The tested sample meets this requirement.

V) 55269268 005 Foil, red:
Specific migration of metals:

Sample No.:	55269268 005			
Sample designation:	Foil, red			
Parameter	Unit	Result	LQ	Limit
Specific migration of metals ⁴				
Aluminium (Al)	mg/ kg	< LQ	0,1	1
Ammonium (NH ₄)	mg/ kg	< LQ *	10	60
Antimony (Sb)	mg/ kg	< LQ	0,01	0,04
Arsenic (As)	mg/ kg	0,002	0,001	ND (0,01)
Barium (Ba)	mg/ kg	< LQ	0,01	1
Cadmium (Cd)	mg/ kg	< LQ	0,001	ND (0,01) / LOD 0,002
Calcium (Ca)	mg/ kg	< LQ *	10	60
Chromium (Cr)	mg/ kg	< LQ	0,001	ND (0,01)
Cobalt (Co)	mg/ kg	< LQ	0,01	0,05
Copper (Cu)	mg/ kg	< LQ	0,01	5
Europium (Eu), Gadolinium (Gd), Lanthanum (La), Terbium (Tb)	mg/ kg	< LQ	0,01	0,05
Iron (Fe)	mg/ kg	< LQ	0,1	48
Lead (Pb)	mg/ kg	< LQ	0,001	ND (0,01)
Lithium (Li)	mg/ kg	< LQ	0,01	0,6
Magnesium (Mg)	mg/ kg	< LQ *	10	60
Manganese (Mn)	mg/ kg	< LQ	0,01	0,6
Mercury (Hg)	mg/ kg	< LQ	0,001	ND (0,01)
Nickel (Ni)	mg/ kg	< LQ	0,01	0,02
Potassium (K)	mg/ kg	< LQ *	10	60
Sodium (Na)	mg/ kg	< LQ *	10	60
Zinc (Zn)	mg/ kg	< LQ	0,1	5

Test conditions: 3% acetic acid, 30 minutes, 40 °C, first migration

* was evaluated on the result of the corresponding analysis of the global migration; ND: not detectable

LQ: Limit of quantification

Worked out:

Person in charge:

 DEKRA Automobil GmbH – Handwerkstr. 17 – 70565 Stuttgart
 Alexandra Haußmann Phone 0711/ 7861-3705

The tested sample meets the limit values for the migration of metals according to annex II of the Regulation (EU) 10/2011 on plastic materials and articles intended to come into contact with food.

Primary aromatic amines:

Sample No.:	55269268 005			
Sample designation:	Foil, red			
Parameter	Unit	Result	LQ	Limit
Primary aromatic amines	mg/ kg	< LQ	0,002	0,01

Test conditions: 3% acetic acid, 30 minues, 40 °C, first migration

According Annex II of Reg. 10/2011 (09_2020) primary aromatic amines listed in entry 43 to Appendix 8 of Annex XVII to Reg. (EC) No 1907/2006 and for which no migration limit is specified in Table 1 of Annex I shall not migrate or shall not otherwise be released from plastic materials and articles into food/ food simulant.

In accordance with Article 11(4) they shall not be detectable with a limit of detection of 0,002 mg/kg food/ food simulant applied to each individual primary aromatic amine.

For primary aromatic amines, not listed in entry 43 to Appendix 8 of Annex XVII to Reg (EC) No 1907/2006, but for which no specific migration limit is specified in Annex I the sum shall not exceed 0,01 mg/kg in food or food simulant.

The tested sample meets this requirement.

Test methods:

Sensorical examination: DIN 10955:2004-06

Primary aromatic amines (extract): SPE and HPLC-DAD (based on DIN EN 14362-1:2017-05) *

Specific migration of metals: VO (EU) 10/2011 / DIN EN ISO 17294-2:2017-01

Global migration: VO (EU) 10/2011 / QMA 1424 and DIN EN 1186-1:2002-07

NIAS-Screening: VO (EU) 10/2011 / GC-QTOF-MS/FID *

Heavy metals: DIN EN ISO 11885:2009-09

Phthalates: DIN EN ISO 14389:2014-10

Catalyst residues: DIN EN ISO 17294-2:2017-01

Hints:

The test results refer exclusively to the samples specified. A reproduction in excerpts of the test report must not be made without the written consent of the test laboratory. Chemical and material blanks are taken into account when determining the results. Samples will be stored according to QMV 5.8 for max. 6 months (for exceptions and specific storage times see QMV 5.8).

* The global migration with oil, the analysis of the primary aromatic amines and the NIAS-screening were performed by an accredited partner-lab.

Stuttgart, 2020/11/20

DEKRA Automobil GmbH

Laboratory for Environmental and Product Analysis



Alexandra Haußmann
Project manager