

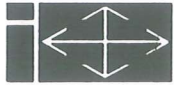
Akkreditiert gemäß
DIN EN 45011

DACH
DAC-ZE-002-08



Deutsche
Akkreditierungsstelle
D-PL-14160-01-00

**ISEGA – Forschungs-
und Untersuchungs-
Gesellschaft mbH
Aschaffenburg**



ISEGA

63704 Aschaffenburg, Postfach 100565
63741 Aschaffenburg, Zeppelinstr. 3-5
Germany
Telefon +49 (0) 60 21 / 49 89-0
Telefax +49 (0) 60 21 / 49 89-30
Email info@isega.de
<http://www.isega.de>

Aschaffenburg, 4 January 2012

From: Zarthe
hoe

REPORT

Order No.: 4349/20 **Page 1 of 12 pages**

Client: iimak International Imaging Materials Europe bvba
Liesdonk 5B
2440 Geel / Belgium

Date of order: 25 November 2011

Receipt of sample material: 29 November + 1 December 2011

Origin of sample material: From the client

Purpose: Analysis of seven thermal transfer ribbons for their compliance with the demands on food contact materials

(Dr. Derra)

(Zarthe)
Officially certified
diplomaed food chemist

The present report refers exclusively to the samples as laid out therein. Information and statistical data on the results can be obtained on request.

Non-accredited determinations have not been validated at the date of the accreditation. Individual determinations were not intended for accreditation owing to their restricted field of application. In these cases, the necessary accuracy for the evaluation is ensured by the internal quality management system.

Geschäftsführer: Dr. Ralph Derra – Handelsregister: Aschaffenburg HRB 3329

Die Veröffentlichung von Ergebnissen unserer Arbeiten und Gutachten sowie die Verwendung für Werbezwecke bedürfen – auch auszugsweise – unserer schriftlichen Genehmigung
Erfüllungsort und Gerichtsstand Aschaffenburg

Akkreditiert gemäß DIN EN ISO / IEC 17025 (D-PL-14160-01-00) und gemäß DIN EN 45011 (DAC-ZE-002-08)

Sample Material

For analysis the following sample material was in hand:

Sample 1:	PM-308 Clean Start Black 110mmx50m CSO, Artikel: CES11026
Sample 2:	GP-725 I-25 Clean Start Black 110mmx50m CSO, Artikel: CES 11074
Sample 3:	Fastwax I-28 Clean Start Black 110mmx50m CSO, Artikel: CES11004KM
Sample 4:	PM-726 Clean Start Black 110mmx50m CSO, Artikel: CES11016
Sample 5:	DC-200 Spot Royal Blue 110mmx50m CSO, Artikel: CES110G4
Sample 6:	Highmark I-35 Black 110mmx50m CSO, Artikel: CES 11012
Sample 7:	NETcolour Spot Royal Blue 109 mm x 50 m CSO, Lot: 008096216

Carrying out of the Tests

Examination period: 6 December 2011 to 27 December 2011

1. Determination of the Migration *

The determination was carried out according to the methods for the "Examination of consumer goods" corresponding to the directives B 80.30, 1 to 3 (EG) of the Official Collection of Analytical Methods according to § 64 LFGB and according to the rules of the series of standards EN 1186, EN 13130 and CEN/TS 14234 „Materials and articles in contact with foodstuffs - Plastics“.

If not stated differently, the results are given as average values of determinations in triplicate.

Conditions:	24 hours at 40 °C
Test simulants:	acetic acid 3 % (w/w)
Testing procedure:	total immersion

Primary Aromatic Amines: The determination was performed by means of HPLC and MS detection.

Result in mg/dm²:

Sample 1 – 7:

4-Aminodiphenyl	not detected	< 0.0005
Benzidine	not detected	< 0.0005
4-Chloro-o-toluidine	not detected	< 0.0005
2-Naphthylamine	not detected	< 0.0005
o-Aminoazotoluene	not detected	< 0.0005
2-Amino-4-nitrotoluene	not detected	< 0.0005
4-Chloroaniline	not detected	< 0.0005
2,4-Diaminoanisole	not detected	< 0.0005
4,4`-Diaminodiphenylmethane	not detected	< 0.0005
3,3`-Dichlorobenzidine	not detected	< 0.0005
3,3`-Dimethoxybenzidine	not detected	< 0.0005
3,3`-Dimethylbenzidine	not detected	< 0.0005

3,3'-Dimethyl-4,4'-diaminodiphenylmethane	not detected	< 0.0005
p-Cresidine	not detected	< 0.0005
4,4'-Methylene-bis(2-chloroaniline)	not detected	< 0.0005
4,4'-Oxydianiline	not detected	< 0.0005
4,4'-Thiodianiline	not detected	< 0.0005
o-Toluidine	not detected	< 0.0005
2,4-Toluylenediamine	not detected	< 0.0005
2,4,5-Trimethylaniline	not detected	< 0.0005
o-Anisidine	not detected	< 0.0005
4-Aminoazobenzene	not detected	< 0.0005
2,4-Dimethylaniline	not detected	< 0.0005
2,4-Dichloraniline	not detected	< 0.0005
1,3-Phenylene diamine	not detected	< 0.0005
p-Aminoanisilide	not detected	< 0.0005
Chloromethoxyaniline	not detected	< 0.0005
2-Methoxy-4-Nitroaniline	not detected	< 0.0005
4-Chloro-2,5-dimethoxyaniline	not detected	< 0.0005
5-Chloro-2-methylaniline	not detected	< 0.0005
2,6-Toluenediamine	not detected	< 0.0005

Sample 1 – 4 + 6:

Aniline	not detected	< 0.0005
---------	--------------	----------

Sample 5:

Aniline		0.0006
---------	--	--------

Sample 7:

Aniline		0.0010
---------	--	--------

2. Determination of the Migration into Tenax (Modified Polyphenylene Oxide) *

The determination was carried out according to the methods for the "Examination of consumer goods" corresponding to the directives B 80.30, 1 to 3 (EG) of the Official Collection of Analytical Methods according to § 64 LFGB and according to the rules of the series of standards EN 1186, EN 13130 and CEN/TS 14234 „Materials and articles in contact with foodstuffs - Plastics“.

The migration was performed as a single-fold determination.

Conditions: 24 hours at 40 °C

Testing procedure: The storage of the sample in indirect contact with Tenax was conducted in a closed system with a distance of approximately 1 cm to the Tenax.

3. Determination of Polycyclic Aromatic Hydrocarbons (PAH)

The determination was performed by HPLC.

Result:

Sample 1:

Naphthalene	not determinable	<	0.3	mg/kg
Acenaphthylene	not determinable	<	6 ^[1]	mg/kg
Acenaphthene	not determinable	<	0.3	mg/kg
Fluorene	not determinable	<	0.3	mg/kg
Phenanthrene	not determinable	<	0.3	mg/kg
Anthracene	not determinable	<	0.3	mg/kg
Fluoranthene			1.6	mg/kg
Pyrene			10.2	mg/kg
Benzo(a)anthracene	not determinable	<	0.3	mg/kg
Chrysene	not determinable	<	0.3	mg/kg
Benzo(b)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(k)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(a)pyrene	not determinable	<	0.3	mg/kg
Dibenzo(a,h)anthracene	not determinable	<	0.3	mg/kg
Benzo(g,h,i)perylene			0.72	mg/kg
Indeno(1,2,3-c,d)pyrene	not determinable	<	1.5 ^[1]	mg/kg

^[1] Due to an interference the determination limit had to be raised.

Sample 2:

Naphthalene	not determinable	<	0.3	mg/kg
Acenaphthylene	not determinable	<	6 ^[1]	mg/kg
Acenaphthene	not determinable	<	0.3	mg/kg
Fluorene	not determinable	<	0.6 ^[1]	mg/kg
Phenanthrene	not determinable	<	0.3	mg/kg
Anthracene	not determinable	<	0.3	mg/kg
Fluoranthene			0.59	mg/kg
Pyrene			5.8	mg/kg
Benzo(a)anthracene	not determinable	<	0.3	mg/kg
Chrysene	not determinable	<	0.3	mg/kg
Benzo(b)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(k)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(a)pyrene	not determinable	<	0.3	mg/kg
Dibenzo(a,h)anthracene	not determinable	<	0.3	mg/kg
Benzo(g,h,i)perylene			0.52	mg/kg
Indeno(1,2,3-c,d)pyrene	not determinable	<	0.6 ^[1]	mg/kg

^[1] Due to an interference the determination limit had to be raised.

Sample 3:

Naphthalene	not determinable	<	0.3	mg/kg
Acenaphthylene	not determinable	<	15 ^[1]	mg/kg
Acenaphthene	not determinable	<	0.3	mg/kg
Fluorene	not determinable	<	0.6 ^[1]	mg/kg
Phenanthrene	not determinable	<	0.3	mg/kg
Anthracene	not determinable	<	0.3	mg/kg
Fluoranthene	not determinable	<	0.3	mg/kg
Pyrene	not determinable	<	0.3	mg/kg
Benzo(a)anthracene	not determinable	<	0.3	mg/kg
Chrysene	not determinable	<	0.3	mg/kg
Benzo(b)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(k)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(a)pyrene	not determinable	<	0.3	mg/kg
Dibenzo(a,h)anthracene	not determinable	<	0.3	mg/kg
Benzo(g,h,i)perylene	not determinable	<	0.3	mg/kg
Indeno(1,2,3-c,d)pyrene	not determinable	<	0.6	mg/kg

^[1] Due to an interference the determination limit had to be raised.

Sample 4:

Naphthalene	not determinable	<	0.3	mg/kg
Acenaphthylene	not determinable	<	15 ^[1]	mg/kg
Acenaphthene	not determinable	<	0.3	mg/kg
Fluorene	not determinable	<	0.6 ^[1]	mg/kg
Phenanthrene	not determinable	<	0.3	mg/kg
Anthracene	not determinable	<	0.3	mg/kg
Fluoranthene			0.39	mg/kg
Pyrene			4.1	mg/kg
Benzo(a)anthracene	not determinable		0.3	mg/kg
Chrysene	not determinable	<	0.3	mg/kg
Benzo(b)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(k)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(a)pyrene	not determinable	<	0.3	mg/kg
Dibenzo(a,h)anthracene	not determinable	<	0.3	mg/kg
Benzo(g,h,i)perylene			0.38	mg/kg
Indeno(1,2,3-c,d)pyrene	not determinable	<	0.6	mg/kg

^[1] Due to an interference the determination limit had to be raised.

Sample 6:

Naphthalene	not determinable	<	0.3	mg/kg
Acenaphthylene	not determinable	<	15 ^[1]	mg/kg
Acenaphthene	not determinable	<	0.3	mg/kg
Fluorene	not determinable	<	1.5 ^[1]	mg/kg
Phenanthrene	not determinable	<	0.3	mg/kg
Anthracene	not determinable	<	0.6 ^[1]	mg/kg
Fluoranthene	not determinable	<	1.5 ^[1]	mg/kg
Pyrene			0.43	mg/kg
Benzo(a)anthracene	not determinable		0.3	mg/kg
Chrysene	not determinable	<	1.5 ^[1]	mg/kg
Benzo(b)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(k)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(a)pyrene	not determinable	<	0.3	mg/kg
Dibenzo(a,h)anthracene	not determinable	<	0.3	mg/kg
Benzo(g,h,i)perylene	not determinable	<	0.3	mg/kg
Indeno(1,2,3-c,d)pyrene	not determinable	<	0.3	mg/kg

^[1] Due to an interference the determination limit had to be raised.

Sample 7:

Naphthalene	not determinable	<	0.3	mg/kg
Acenaphthylene	not determinable	<	15 ^[1]	mg/kg
Acenaphthene	not determinable	<	0.3	mg/kg
Fluorene	not determinable	<	1.5 ^[1]	mg/kg
Phenanthrene	not determinable	<	0.3	mg/kg
Anthracene	not determinable	<	0.3	mg/kg
Fluoranthene	not determinable	<	0.3	mg/kg
Pyrene	not determinable	<	0.3	mg/kg
Benzo(a)anthracene	not determinable	<	6 ^[1]	mg/kg
Chrysene	not determinable	<	6 ^[1]	mg/kg
Benzo(b)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(k)fluoranthene	not determinable	<	0.3	mg/kg
Benzo(a)pyrene	not determinable	<	0.3	mg/kg
Dibenzo(a,h)anthracene	not determinable	<	0.3	mg/kg
Benzo(g,h,i)perylene	not determinable	<	0.3	mg/kg
Indeno(1,2,3-c,d)pyrene	not determinable	<	0.3	mg/kg

^[1] Due to an interference the determination limit had to be raised.

4. Determination of Volatile Organic Compounds (Headspace-GC/MS-Screening) *

The determination was performed by means of head space chromatography and mass spectrometric detection after a storage of 60 minutes at 80 °C. The air space above the sample material was examined for volatile components and was identified against a spectrum library and additionally according to the retention times.

Besides, it was tested for the listed solvents on the basis of the standard EN 13628-1 for the examination of flexible packaging materials as well as for volatile monomers. If not stated differently, the quantification was performed against the internal standard trichlorotrifluoroethane.

Result:

Evaluation of direct quantified compounds:

Sample 1 - 7:

Ethanol	not determinable	<	0.2	mg/m ²
Isopropanol	not determinable	<	0.2	mg/m ²
Hexane	not determinable	<	0.2	mg/m ²
Ethyl acetate	not determinable	<	0.2	mg/m ²
1-Ethoxy-2-propanol	not determinable	<	0.2	mg/m ²
Butyl acetate	not determinable	<	0.2	mg/m ²
Hexanal	not determinable	<	0.2	mg/m ²
Cyclohexanone	not determinable	<	0.2	mg/m ²
Benzene	not determinable	<	0.04	mg/m ²

Sample 1:

Toluene			0.11	mg/m ²
---------	--	--	------	-------------------

Sample 2:

Toluene			0.22	mg/m ²
---------	--	--	------	-------------------

Sample 3:

Toluene			0.15	mg/m ²
---------	--	--	------	-------------------

Sample 4:

Toluene			0.14	mg/m ²
---------	--	--	------	-------------------

Sample 5:

Toluene			0.36	mg/m ²
---------	--	--	------	-------------------

Sample 6:

Toluene	0.13	mg/m ²
---------	------	-------------------

Sample 7:

Toluene	0.54	mg/m ²
---------	------	-------------------

Evaluation of the compounds quantified against the internal standard:

Sample 1:

Acetone	0.02	mg/m ²
2-Butanone	0.06	mg/m ²
3-Methoxypropylacetat	0.08	mg/m ²

Sample 2:

Acetone	0.07	mg/m ²
2-Butanone	2.8	mg/m ²
1,3-Butandiol	0.03	mg/m ²
Siloxan compound	0.06	mg/m ²
Siloxan compound	0.03	mg/m ²

Sample 3:

2-Butanone	0.07	mg/m ²
1-Methoxy-2-propylacetate	0.16	mg/m ²

Sample 4:

Acetaldehyde	0.02	mg/m ²
Methanol	0.03	mg/m ²
Acetone	0.19	mg/m ²
2-Butanone	0.25	mg/m ²
1-Butanol	0.03	mg/m ²
Isopropylhydroperoxid	0.02	mg/m ²
3-Methoxypropylacetat	0.08	mg/m ²
Siloxan compound	0.08	mg/m ²
Siloxan compound	0.08	mg/m ²

Sample 5:

2-Butanone	0.12	mg/m ²
1-Methoxy-2-propylacetate	0.22	mg/m ²
2-Ethylhexanone	0.03	mg/m ²

Sample 6:

Acetone	0.03	mg/m ²
2-Butanone	0.03	mg/m ²
1-Methoxy-2-propylacetate	0.08	mg/m ²

Sample 7:

2-Butanone	0.07	mg/m ²
Octane	0.02	mg/m ²
Alkane	0.03	mg/m ²
Nonan	0.05	mg/m ²
1-Methoxy-2-propylacetate	0.24	mg/m ²
m-/p-Xylene	0.15	mg/m ²
o-Xylene	0.06	mg/m ²
Aromatic compound	0.02	mg/m ²
Alkylbenzene	0.04	mg/m ²
Alkylbenzene	0.02	mg/m ²
Alkylbenzene	0.02	mg/m ²

The following compounds were not determinable in the corresponding chromatograms:

Sample 1 + 2 + 6:

Residual solvents:

1-Butanol	< 0.2	mg/m ²
Isobutanol	< 0.2	mg/m ²
Isopropyl acetate	< 0.2	mg/m ²
Methanol	< 0.2	mg/m ²
1-Methoxy-2-propanol	< 0.2	mg/m ²
Methyl acetate	< 0.2	mg/m ²
Methyl-tert-butylether	< 0.2	mg/m ²
1-Propanol	< 0.2	mg/m ²

Monomers:

Butyl acrylate	< 0.01	mg/dm ²
Ethyl acrylate	< 0.01	mg/dm ²
2-Ethylhexylacrylate	< 0.01	mg/dm ²
Methyl acrylate	< 0.01	mg/dm ²
Butyl methacrylate	< 0.01	mg/dm ²
Isobutyl methacrylate	< 0.01	mg/dm ²
Methyl methacrylate	< 0.01	mg/dm ²
Styrene	< 0.01	mg/dm ²
alpha methyl styrene	< 0.01	mg/dm ²

Aromatics:

Ethylbenzene	< 0.04	mg/m ²
Xylene	< 0.04	mg/m ²

Sample 3 + 5:

Residual solvents:

Acetone	< 0.2	mg/m ²
1-Butanol	< 0.2	mg/m ²
Isobutanol	< 0.2	mg/m ²
Isopropyl acetate	< 0.2	mg/m ²
Methanol	< 0.2	mg/m ²
1-Methoxy-2-propanol	< 0.2	mg/m ²
Methyl acetate	< 0.2	mg/m ²
Methyl-tert-butylether	< 0.2	mg/m ²
1-Propanol	< 0.2	mg/m ²

Monomers:

Butyl acrylate	< 0.01	mg/dm ²
Ethyl acrylate	< 0.01	mg/dm ²
2-Ethylhexylacrylate	< 0.01	mg/dm ²
Methyl acrylate	< 0.01	mg/dm ²
Butyl methacrylate	< 0.01	mg/dm ²
Isobutyl methacrylate	< 0.01	mg/dm ²
Methyl methacrylate	< 0.01	mg/dm ²
Styrene	< 0.01	mg/dm ²
alpha methyl styrene	< 0.01	mg/dm ²

Aromatics:

Ethylbenzene	< 0.04	mg/m ²
Xylene	< 0.04	mg/m ²

Sample 4:

Residual solvents:

Isobutanol	< 0.2	mg/m ²
Isopropyl acetate	< 0.2	mg/m ²
Methanol	< 0.2	mg/m ²
1-Methoxy-2-propanol	< 0.2	mg/m ²
Methyl acetate	< 0.2	mg/m ²
Methyl-tert-butylether	< 0.2	mg/m ²
1-Propanol	< 0.2	mg/m ²

Monomers:

Butyl acrylate	< 0.01	mg/dm ²
Ethyl acrylate	< 0.01	mg/dm ²
2-Ethylhexylacrylate	< 0.01	mg/dm ²
Methyl acrylate	< 0.01	mg/dm ²
Butyl methacrylate	< 0.01	mg/dm ²
Isobutyl methacrylate	< 0.01	mg/dm ²
Methyl methacrylate	< 0.01	mg/dm ²
Styrene	< 0.01	mg/dm ²
alpha methyl styrene	< 0.01	mg/dm ²

Aromatics:

Ethylbenzene	< 0.04	mg/m ²
Xylene	< 0.04	mg/m ²

Sample 7:

Residual solvents:

Acetone	< 0.2	mg/m ²
1-Butanol	< 0.2	mg/m ²
Isobutanol	< 0.2	mg/m ²
Isopropyl acetate	< 0.2	mg/m ²
Methanol	< 0.2	mg/m ²
1-Methoxy-2-propanol	< 0.2	mg/m ²
Methyl acetate	< 0.2	mg/m ²
Methyl-tert-butylether	< 0.2	mg/m ²
1-Propanol	< 0.2	mg/m ²

Monomers:

Butyl acrylate	< 0.01	mg/dm ²
Ethyl acrylate	< 0.01	mg/dm ²
2-Ethylhexylacrylate	< 0.01	mg/dm ²
Methyl acrylate	< 0.01	mg/dm ²
Butyl methacrylate	< 0.01	mg/dm ²
Isobutyl methacrylate	< 0.01	mg/dm ²
Methyl methacrylate	< 0.01	mg/dm ²
Styrene	< 0.01	mg/dm ²
alpha methyl styrene	< 0.01	mg/dm ²

Aromatics:

Ethylbenzene	< 0.04	mg/m ²
--------------	--------	-------------------

5. Determination of Vinylacetate *

The determination was performed by headspace gas chromatography.

Result:

Sample 1 – 7: not determinable < 0.004 mg/dm³

The accreditation applies to the methods marked with * in the test report (Register no. D-PL-14160-01-00).

End of report