

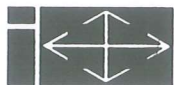
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Aschaffenburg, 27 September 2011

From: Zarthe
hoe

REPORT

Order No.: 4637/10 **Page 1 of 9 pages**

Client: PT. Indah Kiat Pulp & Paper Tbk.
Jl. Raya Serang Km. 76, Desa Kragilan, Sentul, 3rd Floor
Serang 42184, Banten / Indonesia

Date of order: 25 March 2011

Receipt of sample material: 28 March 2011

Origin of sample material: From the client

Purpose: Analysis of three board grades 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.

Sample Material

For analysis the following sample material was in hand:

Sample 1: Sinarboard (C1S)
Sample 2: Sinar Coat
Sample 3: Foopak Heatsealable

Carrying out of the Tests

Examination period: 11 August 2011 to 21 September 2011

1. Determination of the Grammage *

The determination was performed by analogy with DIN EN ISO 536 after conditioning of the sample at 23 °C / 50 % atmospheric humidity which is prescribed as norm climate.

Result:

Sample 1:	272	g/m ²	△	255	g dry matter/m ²
Sample 2:	250	g/m ²	△	235	g dry matter/m ²
Sample 3:	306	g/m ²	△	285	g dry matter/m ²

2. Determination of the Moisture Content *

The determination was performed according to DIN EN ISO 638 directly after unpacking the sample.

Result:

Sample 1 + 2:	6.4	%
Sample 3:	6.9	%

3. Preparation of Extracts *

The extracts were prepared according to the "Methods for the examination of consumer goods" following the method B 80.56 of the Official Collection of Analytical Methods according to § 64 LFGB and according to the demands of the standards EN 645, EN 647 and EN 15519.

Water: 24 hours at 23 °C

Isooctane: 24 hours at 20 °C

4. Determination of the Dry Matter in the Water Extract *

The dry matter was determined according to DIN EN 920 after drying at 105 °C.

Result:

Sample 1:	48	mg/dm ² $\hat{=}$ 19	mg/g dry matter
Sample 2:	40	mg/dm ² $\hat{=}$ 17	mg/g dry matter
Sample 3:	24	mg/dm ² $\hat{=}$ 8.3	mg/g dry matter

5. Determination of Methanal (Formaldehyde) in the Water Extract *

The determination was performed photometrically according to the acetylacetone method in conformity with DIN EN 1541. The requirements of the method B 82.02-1 indicated in the Official Collection of Analytical Methods according to § 64 of the LFGB for consumer goods were observed.

Result:

Sample 1:	0.0110	mg/dm ² $\hat{=}$ 0.004	mg/g dry matter
Sample 2:	0.0175	mg/dm ² $\hat{=}$ 0.007	mg/g dry matter
Sample 3:	not determinable	< 0.004	mg/g dry matter

6. Determination of Glyoxal in the Water Extract *

The determination was performed according to the DIN 54603. The demands of the method no. 4.3.2.2. of the loose-sheet collection "Examination of papers and boards intended for food packaging according to the German Recommendation XXXVI" are taken into consideration.

Result

Sample 1 – 3:	not determinable	< 0.005	mg/g dry matter
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7. Determination of Pentachlorophenol (PCP) *

The analysis was made according to DIN EN ISO 15320 by means of gas chromatography in the water extract after concentration at a column and esterification. The detection was performed by means of ECD.

Result:

Sample 1 – 3:	not determinable	< 0.005	mg/kg dry matter
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8. Determination of the Heavy Metals Contents in the Water Extract *

The determination was performed according to DIN EN 12497 and DIN EN 12498.

Result in mg/kg dry matter:

Sample 1 – 3:

Cadmium	(Cd):	not determinable	< 0.05
Mercury	(Hg):	not determinable	< 0.025
Lead	(Pb):	not determinable	< 0.5
Chromium	(Cr):	not determinable	< 0.1

9. Determination of the Dry Matter in the Organic Solvent Extract *

The dry matter was determined according to DIN EN 1186 after drying at 105 °C.

Result:

Sample 1:	3.4	mg/dm ² $\hat{=}$ 1.3	mg/g dry matter
Sample 2:	2.6	mg/dm ² $\hat{=}$ 1.1	mg/g dry matter
Sample 3:	3.0	mg/dm ² $\hat{=}$ 1.1	mg/g dry matter

10. IR-Spectroscopic Testing of the Dry Matters from the Water and the Organic Solvent Extract *

The dry matters were ground up with KBr and examined by IR-spectroscopy.

Result:

Sample 1 – 3: Substances which might endanger health as well as deviations from the composition stated, which are detectable by this method, were not found.

11. Determination of Polychlorinated Biphenyls (PCB) *

The determination was performed according to DIN EN ISO 15318 by means of gas chromatography. The demands of the method B 80.56-1 within the Official Collection of Analytical Methods according to § 64 LFGB for consumer goods are considered. The numbers refer to the Ballschmücker nomenclature.

Result in mg/kg dry matter:

Sample 1 – 3:

18	2,2',5-Trichlorobiphenyl	not determinable	< 0.01
28	2,4,4'-Trichlorobiphenyl	not determinable	< 0.01
52	2,2',5,5'-Tetrachlorobiphenyl	not determinable	< 0.01
101	2,2',4,5,5'-Pentachlorobiphenyl	not determinable	< 0.01
138	2,2',3,4,4',5'-Hexachlorobiphenyl	not determinable	< 0.01
153	2,2',4,4',5,5'-Hexachlorobiphenyl	not determinable	< 0.01
180	2,2',3,4,4',5,5'-Heptachlorobiphenyl	not determinable	< 0.01

12. Determination of the Transfer of Antimicrobial Constituents *

The determination was made according to DIN EN 1104. Test specimen of a diameter of 10 mm were placed onto an inoculated nutrient medium and then incubated. The inhibition zone is indicated as total diameter (including the test specimen).

Result:

Sample 1 – 3:

with *Aspergillus niger*: no inhibition zone
with *Bacillus subtilis*: no inhibition zone

i.e.: a transfer of antimicrobial constituents was not detected.

13. Test for Fluorescent Substances *

The test was made by UV irradiation.

Result:

Sample 1 – 3: The sample contained optically brightened fibres.

14. Determination of the Fastness of Fluorescent Whitened Paper and Board *

The determination was performed corresponding to the DIN EN 648 with procedure A (long-term contact).

Result:

Sample 1:	water	saliva solution	acetic acid solution	olive oil
Upper side:	5	4	5	5
Wireside:	5	5	5	5
Sample 2:	water	saliva solution	acetic acid solution	olive oil
Upper side:	5	5	5	5
Wireside:	5	5	5	5
Sample 3:	water	saliva solution	acetic acid solution	olive oil
Upper side:	3	3	4	5
Wireside:	4	5	5	5

A range of 1-5 points is given, whereby 5 means complete and 1 no fastness of optical brighteners.

15. Determination of the Heavy Metals Contents *

The determination was performed after microwave disintegration by AAS/hydride technique or ICP-AES, respectively.

Result:

Sample 1:

Arsenic (As):	not determinable	< 1	mg/kg dry matter
Cadmium (Cd):	not determinable	< 0.5	mg/kg dry matter
Chromium (Cr):		1.3	mg/kg dry matter
Mercury (Hg):	not determinable	< 0.25	mg/kg dry matter
Lead (Pb):	not determinable	< 2	mg/kg dry matter

Sample 2:

Arsenic (As):	not determinable	< 1	mg/kg dry matter
Cadmium (Cd):	not determinable	< 0.5	mg/kg dry matter
Chromium (Cr):		2.5	mg/kg dry matter
Mercury (Hg):	not determinable	< 0.25	mg/kg dry matter
Lead (Pb):	not determinable	< 2	mg/kg dry matter

Sample 3:

Arsenic	(As):	not determinable	<	1	mg/kg dry matter
Cadmium	(Cd):	not determinable	<	0.5	mg/kg dry matter
Chromium	(Cr):			2.3	mg/kg dry matter
Mercury	(Hg):	not determinable	<	0.25	mg/kg dry matter
Lead	(Pb):	not determinable	<	2	mg/kg dry matter

16. Extraction Tests According to the FDA Regulations *

The tests were performed according to FDA 21 CFR Ch. I, § 176.170 in triplicate.

a) Extraction with Water

The extraction was made for 24 hours at 49 °C.

Result:

Sample 1:	1.17	mg/sq inch
Chloroform soluble portion:	< 0.011	mg/sq inch
Sample 2:	0.86	mg/sq inch
Chloroform soluble portion:	< 0.011	mg/sq inch
Sample 3:	1.28	mg/sq inch
Chloroform soluble portion:	< 0.011	mg/sq inch

b) Extraction with n-Heptane

The extraction was made for 30 min at 21 °C.

Result:

Sample 1:	0.05	mg/sq inch
Chloroform soluble portion:	The determination is not necessary as test results are already in conformity with the limit value.	
Sample 2:	0.08	mg/sq inch
Chloroform soluble portion:	The determination is not necessary as test results are already in conformity with the limit value.	

Sample 3: 0.05 mg/sq inch

Chloroform soluble portion: The determination is not necessary as test results are already in conformity with the limit value.

17. Sensory Test for Odour *

The examination was made according to EN 1230-1.

The sample was stored in a sealed glass vessel in the dark at 23 ± 2 °C for 20 - 24 hours. Then six assessors evaluated the odour.

Result:

Sample 1 + 2:

A moderately to moderately strong odour was noticed. It was evaluated with 2.5.

Sample 3:

A moderately odour was noticed. It was evaluated with 2.25.

Scale of intensity:

- 0 = no perceptible odour
- 1 = odour just perceptible (still hard to define)
- 2 = moderate odour
- 3 = moderately strong odour
- 4 = strong odour

18. Sensory Analysis for Indirect Transition of Taste *

The examination was made according to EN 1230-2.

The sample was stored with approx. 20 g flaked milk chocolate in a sealed household glass in the dark at 23 ± 2 °C for 44 - 48 hours. The humidity in the glass was fixed at 75 %. The sample was not in direct contact with the chocolate. Thus the transition of substances affecting the taste was effected through the air. Subsequently, the chocolate was evaluated in an extended triangular test according to DIN ISO 4120 by six assessors. Chocolate which had been stored under the same conditions but without the sample was taken as a reference sample.

Result:

Sample 1:

A statistically significant off-flavour of the chocolate which had been stored in indirect contact with the sample was noticed in comparison to the reference sample.

Evaluation (median): 1.75

Sample 2:

A statistically significant off-flavour of the chocolate which had been stored in indirect contact with the sample was noticed in comparison to the reference sample.

Evaluation (median): 1.5

Sample 3:

A statistically significant off-flavour of the chocolate which had been stored in indirect contact with the sample was noticed in comparison to the reference sample.

Evaluation (median): 2.0

Scale of intensity:

- 0 = no perceptible off-flavour
- 1 = off-flavour just perceptible (still difficult to define)
- 2 = moderate off-flavour
- 3 = moderately strong off-flavour
- 4 = strong off-flavour

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

End of report