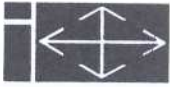




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Aschaffenburg, 1 September 2008

From: Burkardt  
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## REPORT

Order No.: 4045/3 Page 1 of 9 pages

Client: Goricane Tovarna papirja Medvode d.d.  
Ladja 10  
1215 Medvode  
Slovenia

Date of order: 11 June 2008

Receipt of sample material: 30 June 2008

Origin of sample material: From the client

Purpose: Analysis of five paper grades for their conformity with the demands on food contact materials

  
(Dr. Derra)

  
(Weippert)  
Officially certified  
food chemist

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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:	Sora Light
Sample 2:	Sora Mat
Sample 3:	Sora Medico
Sample 4:	Sora Silico EPC
Sample 5:	Sora Silico PVA

## **Carrying out of the Tests**

Examination period: 7 July 2008 to 26 August 2008

### **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:	47.0	g/m <sup>2</sup>	△	44.9	g dry matter/m <sup>2</sup>
Sample 2:	79.4	g/m <sup>2</sup>	△	76.2	g dry matter/m <sup>2</sup>
Sample 3:	40.6	g/m <sup>2</sup>	△	38.2	g dry matter/m <sup>2</sup>
Sample 4:	59.7	g/m <sup>2</sup>	△	57.0	g dry matter/m <sup>2</sup>
Sample 5:	90.5	g/m <sup>2</sup>	△	86.4	g dry matter/m <sup>2</sup>

### **2. Determination of the Moisture Content \***

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

Result:

Sample 1 + 5:	4.2	%
Sample 2:	3.7	%
Sample 3:	5.7	%
Sample 4:	4.4	%

### **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:	2.0	mg/dm <sup>2</sup> $\triangleq$ 4.4	mg/g dry matter
Sample 2:	3.3	mg/dm <sup>2</sup> $\triangleq$ 4.4	mg/g dry matter
Sample 3:	6.7	mg/dm <sup>2</sup> $\triangleq$ 18	mg/g dry matter
Sample 4:	2.8	mg/dm <sup>2</sup> $\triangleq$ 4.9	mg/g dry matter
Sample 5:	3.7	mg/dm <sup>2</sup> $\triangleq$ 4.3	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:	0.004	mg/dm <sup>2</sup> $\triangleq$ 0.009	mg/g dry matter
Sample 3:	0.013	mg/dm <sup>2</sup> $\triangleq$ 0.035	mg/g dry matter
Sample 2 + 4 - 5:	not determinable	< 0.004	mg/g dry matter

#### **6. Determination of Glyoxal in the Water Extract \***

The determination was performed according to the E 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 - 5:	not determinable	< 0.003	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 - 5:	not determinable	< 0.005	mg/kg dry matter
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## 8. Specific Determination of Primary Aromatic Amines

The water extract was cleaned and concentrated on solid-phase columns. The determination was performed by means of HPLC and UV detection.

Result in mg/kg water extract:

Sample 1 - 5:

Aniline	not determinable	< 0.001
4-Aminodiphenyl	not determinable	< 0.001
Benzidine	not determinable	< 0.001
4-Chloro-o-toluidine	not determinable	< 0.001
2-Naphthylamine	not determinable	< 0.001
o-Aminoazotoluene	not determinable	< 0.001
2-Amino-4-nitrotoluene	not determinable	< 0.001
4-Chloroaniline	not determinable	< 0.001
2,4-Diaminoanisole	not determinable	< 0.001
4,4'-Diaminodiphenylmethane	not determinable	< 0.001
3,3'-Dichlorobenzidine	not determinable	< 0.001
3,3'-Dimethoxybenzidine	not determinable	< 0.001
3,3'-Dimethylbenzidine	not determinable	< 0.001
3,3'-Dimethyl-4,4'-diaminodiphenylmethane	not determinable	< 0.001
p-Cresidine	not determinable	< 0.001
4,4'-Methylene-bis(2-chloroaniline)	not determinable	< 0.001
4,4'-Oxydianiline	not determinable	< 0.001
4,4'-Thiodianiline	not determinable	< 0.001
o-Toluidine	not determinable	< 0.001
2,4-Toluylenediamine	not determinable	< 0.001
2,4,5-Trimethylaniline	not determinable	< 0.001
o-Anisidine	not determinable	< 0.001
4-Aminoazobenzene	not determinable	< 0.001
2,4-Dimethylaniline	not determinable	< 0.001
2,4-Dichloroaniline	not determinable	< 0.001

## 9. 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 - 5:

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

Sample 2:

Cadmium (Cd):	not determinable	< 0.05
Mercury (Hg):	not determinable	< 0.025
Lead (Pb):	not determinable	< 0.5
Chromium (Cr):		0.2

## 10. 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:	1.0	mg/dm <sup>2</sup> $\triangleq$ 2.2	mg/g dry matter
Sample 2:	1.3	mg/dm <sup>2</sup> $\triangleq$ 1.7	mg/g dry matter
Sample 3:	0.6	mg/dm <sup>2</sup> $\triangleq$ 1.5	mg/g dry matter
Sample 4:	1.4	mg/dm <sup>2</sup> $\triangleq$ 2.4	mg/g dry matter
Sample 5:	3.2	mg/dm <sup>2</sup> $\triangleq$ 3.7	mg/g dry matter

## 11. 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 - 5: Substances which might endanger health as well as deviations from the composition stated, which are detectable by this method, were not found.

## 12. 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 Ball-schmitter nomenclature.

Result in mg/kg dry matter:

Sample 1 - 5:

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

### 13. 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 - 5:

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

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

### 14. Test for Fluorescent Substances \*

The test was made by UV irradiation.

Result:

Sample 1 - 5: The samples contained optically brightened fibres.

### 15. 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:	3	5	4	5
Wireside:	3	5	4	5
Sample 2:	water	saliva solution	acetic acid solution	olive oil
Upper side:	3	5	5	5
Wireside:	3	5	5	5
Sample 3:	water	saliva solution	acetic acid solution	olive oil
Upper side:	3	4	4	5
Wireside:	3	4	4	5

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

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

## 16. 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	< 3	mg/kg dry matter
Cadmium (Cd):	not determinable	< 0.5	mg/kg dry matter
Chromium (Cr):		6.2	mg/kg dry matter
Mercury (Hg):	not determinable	< 0.25	mg/kg dry matter
Lead (Pb):		19.5	mg/kg dry matter

Sample 2:

Arsenic (As):	not determinable	< 3	mg/kg dry matter
Cadmium (Cd):	not determinable	< 0.5	mg/kg dry matter
Chromium (Cr):		3.6	mg/kg dry matter
Mercury (Hg):	not determinable	< 0.25	mg/kg dry matter
Lead (Pb):		18	mg/kg dry matter

Sample 3:

Arsenic (As):	not determinable	< 3	mg/kg dry matter
Barium (Ba):		16	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):		19	mg/kg dry matter
Antimony (Sb):	not determinable	< 4	mg/kg dry matter
Selenium (Se):	not determinable	< 10	mg/kg dry matter

Sample 4:

Arsenic	(As):	not determinable	<	3	mg/kg dry matter
Barium	(Ba):			8.8	mg/kg dry matter
Cadmium	(Cd):	not determinable	<	0.5	mg/kg dry matter
Chromium	(Cr):			2.9	mg/kg dry matter
Mercury	(Hg):	not determinable	<	0.25	mg/kg dry matter
Lead	(Pb):			15	mg/kg dry matter
Antimony	(Sb):	not determinable	<	4	mg/kg dry matter
Selenium	(Se):	not determinable	<	10	mg/kg dry matter

Sample 5:

Arsenic	(As):	not determinable	<	3	mg/kg dry matter
Cadmium	(Cd):	not determinable	<	0.5	mg/kg dry matter
Chromium	(Cr):			3.6	mg/kg dry matter
Mercury	(Hg):	not determinable	<	0.25	mg/kg dry matter
Lead	(Pb):			27	mg/kg dry matter

## 17. 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:	0.292	mg/sq inch
Chloroform soluble portion:	The determination is not necessary as test results are already in conformity with the limit value.	
Sample 2:	0.389	mg/sq inch
Chloroform soluble portion:	The determination is not necessary as test results are already in conformity with the limit value.	
Sample 3:	0.836	mg/sq inch
Chloroform soluble portion:	The determination is necessary but the examination was stopped.	
Sample 4:	0.287	mg/sq inch
Chloroform soluble portion:	The determination is not necessary as test results are already in conformity with the limit value.	

Sample 5: 0.294 mg/sq inch  
Chloroform soluble portion: The determination is not necessary as test results are already in conformity with the limit value.

b) Extraction with n-Heptane

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

Result:

Sample 1: 0.063 mg/sq inch  
Chloroform soluble portion: The determination is not necessary as test results are already in conformity with the limit value.

Sample 2: 0.112 mg/sq inch  
Chloroform soluble portion: The determination is not necessary as test results are already in conformity with the limit value.

Sample 3: 0.087 mg/sq inch  
Chloroform soluble portion: The determination is not necessary as test results are already in conformity with the limit value.

Sample 4: 0.133 mg/sq inch  
Chloroform soluble portion: The determination is not necessary as test results are already in conformity with the limit value.

Sample 5: 0.226 mg/sq inch  
Chloroform soluble portion: The determination is not necessary as test results are already in conformity with the limit value.

The accreditation applies to the methods marked with \* in the test report (Register no. DAC-P-0035-97-20).

End of report