



Overall Conclusion: The test parameter(s) **MEET** the respective requirements for the below tested items as stated in German § 30 and 31 LFGB (Food and Feed Code) for materials in contact with foodstuffs.

SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION
Sensory Test (Odour and Taste) for Materials in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB and BfR Recommendation	PASS
Extractable Heavy Metals Contents for Paper and Paperboard in Contact with Foodstuffs - § 30 and 31 LFGB and BfR Recommendation	PASS
Formaldehyde Content for Paper and Paperboard in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation	PASS
Fastness of Fluorescence for Paper and Paperboard in Contact with Foodstuffs - § 30 and 31 LFGB and BfR Recommendation	PASS
Migration of Dyes for Paper and Paperboard in Contact with Foodstuffs - § 30 and 31 LFGB and BfR Recommendation	PASS
Specific Migration of Primary Aromatic Amine for Paper and Paperboard in Contact with Foodstuffs – § 30 and 31 LFGB, BfR Recommendation	PASS
Azo Dyestuff Content for Paper and Paperboard in Contact with Foodstuffs - § 30 and 31 LFGB and BfR Recommendation	PASS

Note: The below results are transferred from (6619) 343-1541 dated December 13, 2019.



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Photo of the Submitted Sample





TEST RESULT

Sample Description Assigned by Laboratory:

Test Item	Description	Client Claimed Material
1	Natural straw	Paper

I. Sensory Test (Odour and Taste) for Materials in Contact with Foodstuffs – EC No. 1935/2004 and § 30 and 31 LFGB and BfR Recommendation

Parameter	Result	Maximum Allowable Limit
	1	
Odour	0	2.5 Scale
Taste transfer into foodstuff through simulant, Mineral Water	0	2.5 Scale
Taste transfer into foodstuff through simulant, Butter	0	2.5 Scale
Taste transfer into foodstuff through simulant, Chocolate	0	2.5 Scale
Taste transfer into foodstuff through simulant, Biscuits	0	2.5 Scale
Conclusion	PASS	-

Note: Scale: 0 = no perceptible off-odour (or taste transfer);
1 = off-odour (or taste transfer) just perceptible (but still difficult to define);
2 = slight off-odour (or taste transfer);
3 = distinct off-odour (or taste transfer);
4 = strong off-odour (or taste transfer)

Method: DIN 10955: 2004-06

II. Extractable Heavy Metals Contents for Paper and Paperboard in Contact with Foodstuffs - § 30 and 31 LFGB and BfR Recommendation

Parameter	Unit	Result	Maximum Allowable Limit
		1	
Cadmium (Cd)	ug/l	<0.3	5
Lead (Pb)	ug/l	<0.5	10
Chromium III (Cr III)	ug/dm ²	<1	4
Chromium VI (Cr VI)	ug/dm ²	<0.5	Not Detected
Conclusion	-	PASS	-

Note: “<” = less than
ug/l = microgram per liter
ug/dm² = microgram per square decimeter

Method: EN 645:1994 and analysis by Inductively Coupled Argon Plasma Spectrometer (ICP) and UV-Vis Spectrophotometer.

Remark: The limit refers to BfR Recommendation XXXVI.



TEST RESULT

III. Formaldehyde Content for Paper and Paperboard in Contact with Foodstuffs – § 30 and 31 LFGB and BfR Recommendation

Parameter	Unit	Result	Maximum Allowable Limit
		1	
Formaldehyde	mg/dm ²	<0.5	1
Conclusion	-	PASS	-

Note: “<” = less than
mg/dm² = milligram per square decimeter

Method: EN 645:1994 and analysis by EN 1541:2001.

Remark: The limit refers to BfR Recommendation XXXVI.

IV. Fastness of Fluorescence for Paper and Paperboard in Contact with Foodstuffs - § 30 and 31 LFGB and BfR Recommendation

Test Condition: Procedure B – Medium time contact: 4 h at (23 ± 2) °C

Parameter	Simulant Used	Result	Maximum Allowable Limit
		1	
Fastness of Fluorescence	Distilled water	Grade 5	No less than Grade 5
	3% Acetic acid	Grade 5	
	Alkaline salt solution	Grade 5	
	Olive oil	Grade 5	
Conclusion	-	PASS	-

Note: Scale: 5 = negligible or no change or staining;
4 = slightly changed or stained;
3 = noticeably changed or stained;
2 = considerably changed or stained;
1 = much changed or stained

Method: EN 648: 2018

V. Migration of Dyes for Paper and Paperboard in Contact with Foodstuffs - § 30 and 31 LFGB and BfR Recommendation

Test Condition: Procedure B – Medium time contact: 4 h at (23 ± 2) °C

Parameter	Simulant Used	Result	Maximum Allowable Limit
		1	
Migration of Dyes	Distilled water	Grade 5	No less than Grade 5
	3% Acetic acid	Grade 5	
	Alkaline salt solution	Grade 5	
	Olive oil	Grade 5	
Conclusion	-	PASS	-

Note: Scale: 5 = negligible or no change or staining;
4 = slightly changed or stained;
3 = noticeably changed or stained;
2 = considerably changed or stained;
1 = much changed or stained

Method: EN 646: 2018

Remark: The limit refers to BfR Recommendation XXXVI.



TEST RESULT

VI. Specific Migration of Primary Aromatic Amine for Paper and Paperboard in Contact with Foodstuffs – § 30 and 31 LFGB, BfR Recommendation

Parameter	Unit	Result	Maximum Allowable Limit
		1	
2,4,5-Trimethylaniline	ug/L	<2	2
2,6-Dimethylaniline	ug/L	<2	2
4,4"-Methylenedianiline	ug/L	<2	2
4,4-Diaminodiphenylether	ug/L	<2	2
4-Chloro-o-Toluidine	ug/L	<2	2
4-Methoxy-m-phenylenediamine	ug/L	<2	2
Benzidine	ug/L	<2	2
o-Toluidine	ug/L	<2	2
p-Phenylenediamine*	ug/L	<2	10
2,4-Dimethylaniline*	ug/L	<2	10
2,4-Toluenediamine*	ug/L	<2	10
2,6-Toluenediamine*	ug/L	<2	10
2-Methoxy-5-Methylaniline*	ug/L	<2	10
3,3-Dimethylbenzidine*	ug/L	<2	10
4,4-Methylenedi-o-toluidine*	ug/L	<2	10
4-Aminobiphenyl*	ug/L	<2	10
4-Chloroaniline*	ug/L	<2	10
Aniline*	ug/L	<2	10
m-Phenylenediamine*	ug/L	<2	10
o-Anisidine*	ug/L	<2	10
Sum of *marked compounds	ug/L	<2	10
Conclusion	-	PASS	-

Note: “<” = less than
ug/L = microgram per liter

Method: EN 645:1994, LC-MS analysis.

Remark: The limit refers to BfR Recommendation XXXVI.



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TEST RESULT

VII. Azo Dvestuff Content for Paper and Paperboard in Contact with Foodstuffs - § 30 and 31 LFGB and BfR Recommendation

Parameter	Unit	Result	Maximum Allowable Limit
		1	
o-Toluidine	mg/kg	<10	30
2-Methoxyaniline	mg/kg	<10	30
p-Chloroaniline	mg/kg	<10	30
p-Kresidine	mg/kg	<10	30
2,4,5-Trimethylaniline	mg/kg	<10	30
4-Chloro-o-Toluidine	mg/kg	<10	30
2,4-Toluylenediamine	mg/kg	<10	30
2,4-Diaminoanisole	mg/kg	<10	30
2-Naphthylamine	mg/kg	<10	30
2-Amino-4-nitrotoluene	mg/kg	<10	30
4-Aminodiphenyl	mg/kg	<10	30
p-Aminoazobenzene	mg/kg	<10*	30
4,4'-Oxydianiline	mg/kg	<10	30
Benzidine	mg/kg	<10	30
4,4'-Diaminodiphenylmethane	mg/kg	<10*	30
o-Aminoazotoluene	mg/kg	<10	30
3,3'-Dimethyl-4,4'-diaminodiphenylmethane	mg/kg	<10	30
3,3'-Dimethylbenzidine	mg/kg	<10	30
4,4'-Thiodianiline	mg/kg	<10	30
3,3'-Dichlorobenzidine	mg/kg	<10	30
4,4'-Methylene-bis-(2-chloraniline)	mg/kg	<10	30
3,3'-Dimethoxybenzidine	mg/kg	<10	30
Conclusion	-	PASS	-

Note: mg/kg = milligram per kilogram
“<” = less than
“>” = more than

Method: EN 14362-1:2017
EN 14362-3:2017

Remark: 1. The limit refers to BfR Recommendation XXXVI.
2.*Azo colorants that are able to form p-aminoazobenzene, generate aniline and 1, 4-phenylenediamine under the condition of this method. Aniline and 1, 4-phenylenediamine are not detected under the condition of this method.
3.* Conducting the official method 4, 4-diaminodiphenylmethane has been detected. Please note that detected aromatic amines must stem from azodyes but not from other materials e.g. Polyurethane. If forbidden amines are built by others materials (e.g. Polyurethane) the sample doesn't fail according to the European Legislation. By extracting the sample directly without applying the reduction step 4, 4-Diisocyanatodiphenylmethane has been detected.

END



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ANNEX

Remark: The client declares that the above tested material except colorant will be used in below styles.

