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23 February 2023

Dr. Dr/Hh-pf

**UNBEDENKLICHKEITSERKLÄRUNG
CERTIFICATE OF COMPLIANCE
CERTIFICAT DE CONFORMITE**eingetragen
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für
for
pourXSD INTERNATIONAL PAPER SDN. BHD.
No. 441, Bangunan XSD International Paper Sdn. Bhd.
09400 Padang Meha, Daerah Kulim, Kedah Darul Aman
MalaysiaProdukt
Product
Produit

Coated Duplex Board

The product manufactured by the company mentioned above is a board grade in different grammages which is used for food packaging.

It was examined by us under consideration of the

BfR-„Methodensammlung zur Untersuchung von Papier, Karton und Pappe für den Lebensmittelkontakt“, aktueller Stand, in Verbindung mit dem BfR-Leitfaden "Untersuchung der Stoffübergänge von Bedarfsgegenständen aus Papier, Karton und Pappe" vom 26.02.2015,

(BfR-"Collection of methods for the examination of paper and board for food contact" of the, current state), in connection with the BfR guideline "Examination of the transfer of substances from consumer products made of paper and board", as of 26.02.2015),

for the used raw materials, fabrication additives and special paper finishing agents as well as for the release of substances which might endanger health.

The board grade is in compliance with the rules of the

Regulation (EC) No 1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC, Official Journal of the European Union L 338/4 of 13.11.2004, lastly modified by article 5 of the Regulation (EU) 2019/1381 of 20 June 2019, Official Journal of the European Union L 231/1 of 6 September 2019, article 3, 1. (a) and (b),

as well as of the

Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuches (Lebensmittel- und Futtermittelgesetzbuch - LFGB) in der Fassung der Bekanntmachung vom 15. September 2021 (BGBl. I S. 4253; 2022 I S. 28), zuletzt geändert durch Artikel 2 Absatz 6 des Gesetzes vom 20. Dezember 2022 (BGBl. I S. 2752), §§ 30 und 31,

(Foodstuffs, Consumer Goods and Animal Feed Code (Foodstuffs and Animal Feed Code - LFGB) in the version of the notification of 15 September 2021 (BGBl. I. p. 4253; 2022 I p.28), last amended by article 2 paragraph 6 of the act of 20 December 2022 (BGBl. I p. 2752), §§ 30 and 31),

and is approved according to the

BfR-Empfehlung XXXVI. Papiere, Kartons und Pappen für den Lebensmittelkontakt, neu-gefasst durch 62. Mitteilung, Bundesgesundheitsblatt 14 (1971) 83, zuletzt geändert durch 226. Mitteilung, Bundesgesundheitsblatt 66 (2023) 216-217, Stand vom 01.02.2023,

(BfR Recommendation XXXVI. Paper and board for food contact, recasted by 62nd Announcement, Bundesgesundheitsblatt 14 (1971) 83, last amended by 226th Announcement, Bundesgesundheitsblatt 66 (2023) 216-217, as of 1 February 2023),

for the described purpose.

Thus the board grade in different grammages **Coated Duplex Board** according to the sample material submitted may be used safely for food packaging. It may stand in direct contact with dry, non-fatty foodstuffs and such kind of foodstuffs which are peeled, shelled or washed before consumption and may also be used for secondary packaging. For dry, non-fatty foodstuffs with large surfaces, the migration of volatile and hydrophobic substances via the gas phase has to be considered particularly. This could be ensured by the use of an appropriate intermediate packaging.

This certificate of compliance has a validity of 2 years and consists of 3 pages.

Certification decision



staatlich anerkannter Sachverständiger
zur Untersuchung der Gegenproben von
Verpackungsmitteln aus Papier, Pappe,
Kunststoffen, Glas, Weichblech und
sonstigen Metallverpackungen auf ihre
lebensmittelrechtliche Unbedenklichkeit

(Dr. Hillmann)
Authorized food chemist

The translation of the above stamps is given on page 3.
La traduction des estampilles est donnée en page 3.



**Staatlich anerkannter Sachverständiger
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Lebensmittelrechtliche Unbedenklichkeit**

Dr. Ralph Derra

Authorized expert for the analyses of packaging materials, attested by the Aschaffenburg Chamber of Industry and Commerce.

Expert autorisé pour l'analyse des matériaux d'emballage, assermenté par la Chambre d'Industrie et de Commerce d'Aschaffenburg.

State registered expert for the analysis of contrasting samples of packaging materials of paper, board, plastics, glass, tin plate and other metallic packaging materials as to their suitability for use with foodstuffs.

Expert public pour l'étude du contrôle des contre-échantillons d'emballages de papier, cartons, plastiques, verre, fer-blanc et d'autres emballages métalliques concernant leur conformité alimentaire.



Dr. Ralph Derra

Authorized expert for the analyses of soil and air, attested by the Aschaffenburg Chamber of Industry and Commerce.

Expert autorisé pour l'analyse du sol et de l'air, assermenté par la Chambre d'Industrie et de Commerce d'Aschaffenburg.

Die Rücklagen des untersuchten Materials werden bei der Gutachterstelle verwahrt.
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A file sample of the tested material is kept at the expert's office.
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Aschaffenburg, 23 February 2023

From: Hh-pf
Authorized by: Dr Hillmann

REPORT

Order No.: 19795/1 **Page 1 of 9 pages**

Client: XSD INTERNATIONAL PAPER SDN. BHD.
No. 441, Bangunan XSD International Paper Sdn. Bhd.
09400 Padang Meha, Daerah Kulim, Kedah Darul Aman
Malaysia

Date of order: 16 November 2022

Receipt of sample material: 19 December 2022

Origin of sample material: From the client

Purpose: Analysis of a board grade for its compliance with the
demands on food contact materials



(Dr. Derra)
Managing Director



(Dr. Hillmann)
Authorized food chemist

The present report exclusively refers to the samples mentioned. It meets the requirements of the DIN EN ISO/IEC 17025:2018 for simplified test reports. Additional information and statistical data on the results are available upon request.

Sample Material

For analysis the following sample material was in hand:

Coated Duplex Board

Carrying out of the Tests

Examination period: 3 January 2023 to 17 February 2023

1. Determination of the Grammage *

The determination was performed according to DIN EN ISO 536:2012-11 after conditioning of the sample at 23 °C/50 % relative humidity which is prescribed as standard atmosphere with a reduced amount of test specimens.

Result: 450 g/m² $\triangleq$ 421 g dry matter/m²

2. Determination of the Moisture Content *

The determination was performed as single determination according to DIN EN ISO 638-1:2022-07 in the condition as received.

Result: 6.0 %

3. Preparation of Extracts *

The extracts were prepared according to the "Methodensammlung zur Untersuchung von Papier, Karton und Pappe für den Lebensmittelkontakt" (collection of methods for the examination of paper and board for food contact) of the BfR as well as according to DIN EN 645:1994-01, 647:1994-01 and 15519:2008-01. The selection of suitable procedures for simulating the transfer of substances was performed according to the corresponding BfR guideline ("Leitfaden zur Überprüfung der Stoffübergänge von Bedarfsgegenständen aus Papier, Karton und Pappe").

Water: 24 hours at 23 °C
Isooctane: 24 hours at 20 °C
95 % Ethanol: 2 hours at 60 °C

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

The determination was performed according to DIN EN 920:2000-12 gravimetrically after drying at 105 °C:

Result: 43 mg/dm² $\triangleq$ 10 mg/g dry matter

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

The determination was performed according to DIN EN 1541:2001-07 photometrically in line with the acetylacetone method.

Result: not quantifiable < 0.004 mg/g

6. Determination of Glyoxal in the Water Extract *

The determination was performed according to DIN 54603:2008-08.

Result: not quantifiable < 0.005 mg/g

7. Determination of the Elements in the Water Extract *

The determination was performed according to DIN EN 12498:2019-02.

Result:

Cadmium	(Cd):	not quantifiable	< 0.001	mg/l water extract
Lead	(Pb):	not quantifiable	< 0.001	mg/l water extract
Chromium	(Cr):	not quantifiable	< 0.004	mg/l water extract
Aluminium	(Al):	not quantifiable	< 0.2	mg/l water extract

8. IR-Spectroscopic Testing of the Dry Matter from the Water Extract *

The dry matter was ground up with KBr and examined by IR-spectroscopy.

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

9. Gaschromatographic Analysis of the Organic Solvent Extract *

The determination was performed according to SOP 160.200 by means of GC-FID in the isoocane extract. All compounds which elute between tetradecane (C₁₄) and tetracontane (C₄₀) were summed up semi-quantitatively against the internal standard tridecane (C₁₃). Analogously, a separate evaluation of the dialkyl ketones was performed considering the following substances:

Dipentadecyl ketone (Palmitone)	Pentadecylheptadecyl ketone	Diheptadecyl ketone (Stearone)
Heptadecylnonadecyl ketone	Dinonadecyl ketone	Nonadecylheneicosyl ketone
Diheneicosyl ketone		

Result:

Sum C ₁₄ - C ₄₀	5.7	mg/dm ² $\triangleq$ 1.4	mg/g dry matter
Dialkyl ketones	1.1	mg/dm ² $\triangleq$ 0.3	mg/g dry matter

10. Determination of the Transfer of Antimicrobial Constituents *

The determination was made according to DIN EN 1104:2019-01. Test specimens 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:

with *Aspergillus niger*: Microbial growth up to the edges of the test specimens.
Presence of a microbial contaminant of < 2 mm around the test pieces.

with *Bacillus subtilis*: Microbial growth up to the edges of the test specimens.
Presence of a microbial contaminant of < 2 mm around the test pieces.

Comment:

The proof of the presence of an inhibition zone is provided by the absence of test microorganism growth in a minimum diameter of 14 mm.

Therefore, a transfer of antimicrobial constituents is considered as not detected.

11. Test for Fluorescent Substances *

The test was made by UV irradiation.

Result: The sample contained optically brightened fibres.

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

The determination was performed according to EN 648:2019-02.

Contact conditions: 24 hours at room temperature (procedure A)

Glass fibre paper: MACHEREY-NAGEL MN 86/70 BF

Result:	water	salt solution pH 8.6	acetic acid solution	sunflower oil
Upper side:	3	4	4	3
Bottom side:	3	3	3	2

Distinction is made between five evaluation grades, whereby 1 means poor and 5 good colour fastness.

13. Determination of Anthraquinone [84-65-1] * and 2-Ethylantraquinone [84-51-5]

The determination was performed according to DIN CEN/TS 17630:2021-09 by means of GCMS after extraction with 95 % ethanol (v/v).

Result:

Anthraquinone:	not quantifiable	< 0.13	mg/kg dry matter
2-Ethylantraquinone:	not quantifiable	< 0.13	mg/kg dry matter

14. Determination of Volatile Contaminants *

The determination was performed according to SOP 160.200 by means of GCMS in an acetone extract. The following compounds were considered:

Diisopropylnaphthalene (DIPN)	[38640-62-9]
Other solvent	
Benzophenone	[119-61-9]
4-Methyl benzophenone	[134-84-9]
Dimethyl phthalate	[131-11-3]
Diethyl phthalate	[84-66-2]
Dibutyl phthalate	[84-74-2]
Diisobutyl phthalate	[84-69-5]
Di(2-ethylhexyl) phthalate	[117-81-7]
Di-n-octyl phthalate	[117-84-0]
Benzylbutyl phthalate	[85-68-7]
Diisononyl phthalate (DINP)	[68515-48-0]
Diisodecyl phthalate (DIDP)	[26761-40-0]
Di-(2-ethylhexyl) adipate	[103-23-1]
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	[6846-50-0]
Diisononyl-1,2-cyclohexanedicarboxylate (DINCH)	[166412-78-8]
Diethylene glycol dibenzoate	[120-55-8]
Benzyl-2-naphthylether	[613-62-7]

Limits of quantitation:

DINP, DIDP, DINCH 10 mg/kg dry matter;
all other compounds 1 mg/kg dry matter.

Result:

Benzophenone	3.8	mg/kg dry matter
Diisopropylnaphthalene (DIPN)	1.7	mg/kg dry matter
Dibutyl phthalate	1.4	mg/kg dry matter
Benzyl-2-naphthylether	1.2	mg/kg dry matter
Diethylene glycol dibenzoate	8.0	mg/kg dry matter
Di(2-ethylhexyl) phthalate	8.4	mg/kg dry matter
Di-(2-ethylhexyl) adipate	1.2	mg/kg dry matter

The remaining compounds were not quantifiable.

15. Determination of Polycyclic Aromatic Hydrocarbons (PAH) *

The determination was performed according to the draft standard by means of GCMS. The following compounds were considered:

Naphthalene	[91-20-3]	Benzo[b]naphtho[1,2-d]thiophene	[205-43-6]
2-Methyl naphthalene	[91-57-6]	Benzo[a]anthracene	[56-55-3]
1-Methyl naphthalene	[90-12-0]	Triphenylene/Chrysene	[217-59-4]/[218-01-9]
Acenaphthylene	[208-96-8]	Benzo[b]fluoranthene	[205-99-2]
Acenaphthene	[83-32-9]	Benzo[k]fluoranthene	[207-08-9]
Fluorene	[86-73-7]	Benzo[e]pyrene	[192-97-2]
Phenanthrene	[85-01-8]	Benzo[a]pyrene	[50-32-8]
Anthracene	[120-12-7]	Perylene	[198-55-0]
2-Methyl phenanthrene	[2531-84-2]	Indeno[1,2,3-cd]pyrene	[193-39-5]
Fluoranthene	[206-44-0]	Dibenzo[a,h]anthracene	[53-70-3]
Pyrene	[129-00-0]	Benzo[g,h,i]perylene	[191-24-2]
Benzo[c]phenanthrene	[195-19-7]		

Limits of quantitation:

Acenaphthylene, Fluorene, Fluoranthene, Triphenylene/Chrysene 0.03 mg/kg dry matter;
all other compounds 0.02 mg/kg dry matter.

Result:

Phenanthrene	0.03	mg/kg dry matter
2-Methyl phenanthrene	0.02	mg/kg dry matter
Pyrene	0.03	mg/kg dry matter

Further compounds listed above were not quantifiable.

16. Determination of the Specific Migration into Tenax® (Modified Polyphenylene Oxide)

*

The migration was performed as a single fold determination according to DIN EN 14338:2004-03.

Conditions: 10 days at 40 °C

Testing procedure: one-sided contact (uncoated side)

Subsequently, the volatile components adsorbed onto Tenax were extracted.

16.1. Gas chromatographic Analysis

The determination was performed according to SOP 160.200 by means of GCMS after extraction with methyl *tert*-butylether.

Specific Evaluation

In addition, an examination for the below listed contaminants was performed.

Result:

Diisopropylnaphthalene (DIPN)	[38640-62-9]	not quantifiable	<	0.05	mg/dm ²
Other solvent		not quantifiable	<	0.05	mg/dm ²
Benzophenone	[119-61-9]	not quantifiable	<	0.02	mg/dm ²
4-Methyl benzophenone	[134-84-9]	not quantifiable	<	0.02	mg/dm ²
Dimethyl phthalate	[131-11-3]	not quantifiable	<	0.05	mg/dm ²
Diethyl phthalate	[84-66-2]	not quantifiable	<	0.05	mg/dm ²
Dibutyl phthalate	[84-74-2]	not quantifiable	<	0.02	mg/dm ²
Diisobutyl phthalate	[84-69-5]	not quantifiable	<	0.02	mg/dm ²
Di(2-ethylhexyl) phthalate	[117-81-7]	not quantifiable	<	0.05	mg/dm ²
Di-n-octyl phthalate	[117-84-0]	not quantifiable	<	0.05	mg/dm ²
Benzylbutyl phthalate	[85-68-7]	not quantifiable	<	0.05	mg/dm ²
Diisononyl phthalate	[68515-48-0]	not quantifiable	<	0.15	mg/dm ²
Diisodecyl phthalate	[26761-40-0]	not quantifiable	<	0.20	mg/dm ²
Di-(2-ethylhexyl) adipate	[103-23-1]	not quantifiable	<	0.05	mg/dm ²
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate (TXIB)	[6846-50-0]	not quantifiable	<	0.02	mg/dm ²
Diisononyl-1,2-cyclohexane-dicarboxylate (DINCH)	[166412-78-8]	not quantifiable	<	0.15	mg/dm ²
Diethylene glycol dibenzoate	[120-55-8]	not quantifiable	<	0.002	mg/dm ²
Benzyl-2-naphthylether	[613-62-7]	not quantifiable	<	0.002	mg/dm ²

16.2. Mineral Oil (MOSH/MOAH) *

The determination was performed according to the DIN SPEC 5010:2018-05 after extraction with n-hexane.

The paraffinic, naphthenic mineral oil hydrocarbons (MOSH) and the aromatic mineral oil hydrocarbons (MOAH) were examined according to the publication „Messung von Mineralöl-Kohlenwasserstoffen in Lebensmitteln und Verpackungsmaterialien / Determination of mineral oil hydrocarbons in foods and packaging materials“ (Bundesinstitut für Risikobewertung (BfR) / Kantonales Labor Zürich (KLZH); 4 May 2012) by means of on-line coupled HPLC-GC-FID.

	MOSH			MOAH		
	≥ C ₁₀ - ≤ C ₁₆	> C ₁₆ - ≤ C ₂₀	> C ₂₀ - ≤ C ₃₅	≥ C ₁₀ - ≤ C ₁₆	> C ₁₆ - ≤ C ₃₅	
Result:	< 0.08	0.17	0.46	< 0.08	< 0.08	mg/dm ²

17. Determination of Mineral Oil Hydrocarbons (MOSH/MOAH) *

The determination was performed according to the publication „Messung von Mineralöl-Kohlenwasserstoffen in Lebensmitteln und Verpackungsmaterialien / Determination of mineral oil hydrocarbons in foods and packaging materials“ (Bundesinstitut für Risikobewertung (BfR) / Kantonales Labor Zürich (KLZH); 4 May 2012).

The paraffinic, naphthenic mineral oil hydrocarbons (MOSH) and the aromatic mineral oil hydrocarbons (MOAH) were examined by means of on-line coupled HPLC-GC-FID after extraction with a mixture of ethanol/n-hexane.

Result:

MOSH – $\geq C_{10} - \leq C_{16}$:	6.1	mg/kg
MOSH – $> C_{16} - \leq C_{25}$:	189	mg/kg
MOSH – $> C_{16} - \leq C_{35}$:	636	mg/kg
MOSH – $> C_{20} - \leq C_{35}$:	591	mg/kg
MOAH – $\geq C_{10} - \leq C_{16}$: not quantifiable <	4	mg/kg
MOAH – $> C_{16} - \leq C_{25}$:	35	mg/kg
MOAH – $> C_{16} - \leq C_{35}$:	110	mg/kg

18. Determination of Per- and Polyfluoro Alkyl Substances (PFAS)

The determination was performed according to SOP 162.200 by means of LCMS in a methanol extract. The following compounds were considered:

Perfluoro alkyl acids:

- butanoic	(PFBA)	[375-22-4]
- pentanoic	(PFPeA)	[2706-90-3]
- hexanoic	(PFHxA)	[307-24-4]
- heptanoic	(PFHpA)	[375-85-9]
- octanoic	(PFOA)	[335-67-1]
- nonanoic	(PFNA)	[375-95-1]
- decanoic	(PFDA)	[335-76-2]
- undecanoic	(PFUnDA)	[2058-94-8]
- dodecanic	(PFDoDA)	[307-55-1]
- tridecanoic	(PFTrDA)	[72629-94-8]
- tetradecanoic	(PFTeDA)	[376-06-7]
- hexadecanoic	(PFHxDA)	[67905-19-5]
- octadecanoic	(PFOcDA)	[16517-11-6]

Perfluoro alkyl sulfonic acids:

- butane sulfonic	(PFBS)	[375-73-5]
- pentane sulfonic	(PFPeS)	[2706-91-4]
- hexane sulfonic	(PFHxS)	[355-46-4]
- heptane sulfonic	(PFHpS)	[375-92-8]
- octane sulfonic	(PFOS)	[1763-23-1]
- nonane sulfonic	(PFNS)	[68259-12-1]
- decane sulfonic	(PFDS)	[335-77-3]
- undecane sulfonic	(PFUnDS)	[749786-16-1]
- dodecane sulfonic	(PFDoS)	[79780-39-5]
- tridecane sulfonic	(PFTrDS)	[791563-89-8]

H4-Polyfluoro		
octane sulfonic acid	(H4PFOS)	[27619-97-2]
Perfluorooctane		
sulfonamide	(PFOSA)	[754-91-6]

Limit of quantitation: 0.01 mg/kg

Result:

None of the above-listed compounds were quantifiable.

19. Determination of Recycling Contaminants in the Organic Solvent Extract

The determination was performed according to SOP 162.200 by means of LCMS in the 95% ethanol extract. The following compounds were considered:

Benzophenone	[119-61-9]
2-Methylbenzophenone	[131-58-8]
3-Methylbenzophenone / 4-Methylbenzophenone	[643-65-2] / [134-84-9]
2-Hydroxybenzophenone	[117-99-7]
4-Hydroxybenzophenone	[1137-42-4]
4,4'-Bis(dimethylamino)-benzophenone (Michler's ketone)	[90-94-8]
4,4'-Bis(diethylamino)-benzophenone (DEAB)	[90-93-7]
Bisphenol A	[80-05-7]
Bisphenol S	[80-09-1]
Bisphenol B	[77-40-7]
Bisphenol F	[620-92-8]
N-(p-toluenesulfonyl)-N'-(3-(p-toluene-sulfonyloxy)phenyl) (Pergafast 201)	[232938-43-1]
m-Aminophenol p-toluenesulfonate (m-Aminophenyl tosylate)	[3865-15-4]
N-(Methoxycarbonyl)-p-toluenesulfonamide (Methyl tosylcarbamate)	[14437-03-7]
2-Ethylhexyl 4-dimethylaminobenzoate (EHDAB)	[21245-02-3]
Ethyl 4-dimethylaminobenzoate (EDAB)	[10287-53-3]
2-Isopropylthioxanthone (ITX)	[5495-84-1]
4-Diethylaminobenzaldehyde	[120-21-8]

Limit of quantitation: 0.01 mg/l extract

Result:

Benzophenone	0.08	mg/l extract
Bisphenol A	0.09	mg/l extract
Bisphenol S	0.3	mg/l extract
4,4'-Bis(diethylamino)-benzophenone (DEAB)	0.03	mg/l extract
4,4'-Bis(dimethylamino)-benzophenone (Michler's ketone)	0.01	mg/l extract

Further compounds listed above were not quantifiable.

The accreditation applies to the methods marked with * in the test report (Register no. D-PL-14160-01-01 and D-PL-14160-01-02).

End of report