



**SUBJECT** Chemical Test

**TEST LOCATION** TÜV SÜD China  
TÜV SÜD Products Testing (Shanghai) Co., Ltd.  
B-3/4, No.1999 Du Hui Road, Minhang District  
Shanghai 201108, P.R. China

**CLIENT NAME** HUBEI HYF PACKAGING CO., LTD  
**CLIENT ADDRESS** NO. 387, JIEFANG AVENUE, QIAOKOU DISTRICT, WUHAN CITY, HUBEI PROVINCE, CHINA

**TEST PERIOD** 29-Oct-2018~13-Nov-2018

**TEST REQUEST**  
1. In accordance with German Food & Feed Acts of September 1, 2005 (LFGB), Section 30 and 31, European COMMISSION REGULATION (EU) No 10/2011 and its amendments and Recommendation of the BfR.  
- Overall migration test  
- Specific migration of Primary Aromatic Amine  
- Specific migration of Heavy metals  
- Specific Migration of Terephthalic acid  
- Specific Migration of Glycol  
- Total heavy metal content  
- Sensory test  
2. Bisphenol A content

**CONCLUSION** **PASS**  
The submitted sample was found to **comply with** the Overall migration, specific migration of Primary Aromatic Amine and Heavy metals, Terephthalic acid , Glycol , Total heavy metal content and Sensory test requirement(s) of as stated in European COMMISSION REGULATION (EU) No 10/2011 and its amendments on plastic materials and articles intended to come into contact with food.

Prepared By

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Authorized By

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( Joyce Zhang )  
Authorized Signatory

**Note:** (1) General Terms & Conditions as mentioned overleaf. (2) The results relate only to the items tested.(3) The test report shall not be reproduced except in full without the written approval of the laboratory.(4) Without the agreement of the laboratory , the client is not authorized to use the test results for unapproved propaganda. (5)The test result can be used by client for quality control.


**RECEIPT DATE / TEST DATE**

29-Oct-2018/ 29-Oct-2018

**THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED**

**BY/ ON BEHALF OF THE CLIENTS AS**

Sample Name: PETG SHRINKABLE FILM  
Sample Specification: HYF181016000101  
Batch No./Date: 16-10-2018  
Manufacturer: HUBEI HYF PACKAGING CO., LTD

SAMPLE NO.	DESCRIPTION	PHOTOGRAPH
721642233	Transparent plastic film	

**TEST METHOD(S)**

- For material : Plastics
  - Overall migration test in accordance with REGULATION (EU) No 10/2011 and its amendments on plastic materials and articles intended to come into contact with food.
  - As specified in REGULATION (EU) No 10/2011 and its amendments; with reference to EN 1186: Part 2 (Test methods for overall migration into olive oil by total immersion)/ EN 1186: Part 3 (Test methods for overall migration into aqueous food simulants by total immersion)/ EN 1186: Part 14 (Substitute test)
- Specific Migration of Heavy metal
  - Al, Ba, Co, Cu, Fe, Li, Mn, Zn, Ni
  - As specified in REGULATION (EU) No 10/2011 and its amendments; with reference to EN13130-1:2004, followed by ICP-MS.
- For material : Plastics
  - Primary Aromatic Amine
  - With reference to EN13130-1:2004, followed by Kunststoffe im Lebensmittelverkehr, Book 2, Teil B II,XXI
- Specific Migration of Terephthalic acid
  - As specific in REGULATION (EU) No 10/2011 and its amendments; with reference to EN13130-1:2004, followed by HPLC.
- Specific Migration of Glycol
  - As specific in REGULATION (EU) No 10/2011 and its amendments; with reference to to EN13130-1:2004, followed by GC.
- Total heavy metal content
  - Sb, Ga, Ge, Co, Li, Mn, Zn, Ti, Pb, P
  - Acid digestion, then followed by ICP-OES.



7. Sensory test

- With reference to DIN 10955.
- The submitted sample was immersed in distilled water at 60°C for 10 days. After this treatment treated water was examined by panels with regard to any divergence in smell and taste.

8. Bisphenol A content

- With reference to EPA3550C-2007
- The sample was extracted by acetonitrile, then Bisphenol A content of solution was analyzed by High Performance Liquid Chromatography (HPLC)

**TEST RESULT(S)**

1. Overall Migration Test - with reference to EN 1186 : Part 2, Part 3 & Part 14

Simulant(s) Used	Test Condition	Overall Migration Result(s) [mg/dm <sup>2</sup> ]	Maximum Permissible Limit [mg/dm <sup>2</sup> ]
3% Acetic acid	40°C for 10 days	0.8	10
10% Ethanol	40°C for 10 days	0.6	10
50% Ethanol	40°C for 10 days	0.6	10
95% Ethanol	40°C for 10 days	<0.5	10
Iso-octane	20°C for 2 days	<0.5	10

- Note:
1. mg/dm<sup>2</sup> denotes milligram per square decimeter
  2. < denotes less than
  3. Specification is quoted from (EU) No.10/2011

2. Specific Migration: Heavy metal - Al, Ba, Co, Cu, Fe, Li, Mn, Zn, Ni  
- Test condition: 3% Acetic acid, 60°C for 10 days

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Aluminum	0.1	1
Barium	<0.1	1
Cobalt	<0.05	0.05
Copper	<0.5	5
Iron	<1.0	48
Lithium	<0.1	0.6
Manganese	<0.05	0.6
Zinc	<1.0	5
Nickel	<0.002	0.02



- Test condition: 10% Ethanol, 60°C for 10 days

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Aluminum	<0.1	1
Barium	<0.1	1
Cobalt	<0.05	0.05
Copper	<0.5	5
Iron	<1.0	48
Lithium	<0.1	0.6
Manganese	<0.05	0.6
Zinc	<1.0	5
Nickel	<0.002	0.02

- Test condition: 50% Ethanol, 60°C for 10 days

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Aluminum	<0.1	1
Barium	<0.1	1
Cobalt	<0.05	0.05
Copper	<0.5	5
Iron	<1.0	48
Lithium	<0.1	0.6
Manganese	<0.05	0.6
Zinc	<1.0	5
Nickel	<0.002	0.02

- Test condition: 95% Ethanol, 60°C for 10 days

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Aluminum	<0.1	1
Barium	<0.1	1
Cobalt	<0.05	0.05
Copper	<0.5	5
Iron	<1.0	48
Lithium	<0.1	0.6



Manganese	<0.05	0.6
Zinc	<1.0	5
Nickel	<0.002	0.02

- Test condition: Iso-octane, 60°C for 10 days

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Aluminum	<0.1	1
Barium	<0.1	1
Cobalt	<0.05	0.05
Copper	<0.5	5
Iron	<1.0	48
Lithium	<0.1	0.6
Manganese	<0.05	0.6
Zinc	<1.0	5
Nickel	<0.002	0.02

Note: 1. mg/kg denotes milligram per kilogram foodstuff  
2. < denotes less than

### 3. Primary Aromatic Amine

- With reference to EN13130-1:2004, followed by Kunststoffe im Lebensmittelverkehr, Book 2, Teil B II,XXI
- Test condition: 3% Acetic acid, 40°C for 5 mins

Test Item(s)	Test condition	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Primary Aromatic Amine	3% Acetic acid; 60°C for 10 days	<0.01	0.01
	10% Ethanol; 60°C for 10 days	<0.01	0.01
	50% Ethanol; 60°C for 10 days	<0.01	0.01
	95% Ethanol; 60°C for 10 days	<0.01	0.01
	Iso-octane; 60°C for 10 days	<0.01	0.01

Note: 1. mg/kg denotes milligram per kilogram foodstuff  
2. < denotes less than  
3. Detection limit is 0.01 mg/kg



4. Specific Migration of Terephthalic acid

Test Item(s)	Test condition	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Specific Migration of Terephthalic acid	3% Acetic acid; 60°C for 10 days	<1.0	7.5
	10% Ethanol; 60°C for 10 days	<1.0	7.5
	50% Ethanol; 60°C for 10 days	<1.0	7.5
	95% Ethanol; 60°C for 10 days	<1.0	7.5
	Iso-octane; 60°C for 10 days	<1.0	7.5

Note: 1. mg/kg denotes milligram per kilogram foodstuff  
2. < denotes less than

5. Specific Migration of Glycol

Test Item(s)	Test condition	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Specific Migration of Glycol	3% Acetic acid; 60°C for 10 days	<3.0	30
	10% Ethanol; 60°C for 10 days	<3.0	30
	50% Ethanol; 60°C for 10 days	<3.0	30
	95% Ethanol; 60°C for 10 days	<3.0	30
	Iso-octane; 60°C for 10 days	<3.0	30

Note: 1. mg/kg denotes milligram per kilogram foodstuff  
2. < denotes less than

6. Total heavy metal content

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Antimony	104	350
Gallium	<15	20
Germanium	<15	100
Cobalt	<15	125
Lithium	<15	130
Manganese	<15	140
Zinc	<15	80
Titanium	53	120
Lead	<15	40
Phosphorus	30	125



Note: 1. mg/kg denotes milligram per kilogram  
2. < denotes less than

7. Sensory test  
- With reference to DIN 10955.

Sample(s)	Testing Parameter	Grading result(s)	Recommended level
721642233	Transfer of taste	0	<3
	Transfer of smell	0	<3

Note: 1. < denotes less than.  
2. Available grading are listed as follow:  
Grading 0: No perceptible taste/smell deviation  
1: Just perceptible taste/smell deviation  
2: Weak taste/smell deviation  
3: Clear taste/smell deviation  
4: Strong taste/smell deviation

8. Bisphenol A content

Test item(s)	Result(s) [mg/kg]	Method detection limit [mg/kg]
Bisphenol A content	<0.01	0.01

Note: 1. mg/kg denotes milligram per kilogram  
2. < denotes less than

-END OF THE TEST REPORT-