



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 Shijiazhuang Hongray Group Co.,Ltd.

CLIENT ADDRESS South Tongda Rd., East Dist., Jinzhou City, Hebei, 052260, China

TEST PERIOD 26-Jul-2022~11-Aug-2022

RESULT SUMMARY

- The tested items **complied with** European Resolution Res AP (2004) 4 on rubber products intended to come into contact with foodstuffs.
 - Overall migration test (3% Acetic acid, 10% Ethanol, 20% Ethanol) **PASS**
 - Specific Migration of Total Primary Aromatic Amine **PASS**
 - Specific Migration of Acrylonitrile **PASS**
 - Specific Migration of 1,3 - Butadiene **PASS**
 - 1,3 - Butadiene content **PASS**
 - Specific Migration of N-nitrosamines and N-nitrosatable substances **PASS**
- With reference to European COMMISSION REGULATION (EU) No 2020/1245, (EU) No 10/2011 and its amendments on plastic materials and articles intended to come into contact with food; Article 3 of Regulation (EC) No. 1935/2004 (Materials and articles intended to come into contact with food).
 - Specific Migration of 29 Primary Aromatic Amine **PASS**
 - Sensory test **PASS**
- The tested items **complied with** France Law No. 2012-1442 of 24 December 2012 for the suspension of the manufacture, import, export and marketing of all-purpose food packaging containing bisphenol A.
 - Bisphenol A content **PASS**

Prepared By

(Judy Hu)
Report Drafter

Authorized By

(Leo Liu)
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.

RECEIPT DATE / TEST DATE

26-Jul-2022/ 26-Jul-2022

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED

BY/ ON BEHALF OF THE CLIENTS AS

Sample Name: Disposable Nitrile Glove, Powder Free,Diamond Texture,Orange
Sample Specification: Size: M
Batch No./Date: /
Manufacturer: /

SAMPLE NO.	DESCRIPTION	PHOTOGRAPH
721673194-4-1	Orange gloves	

TEST RESULT(S)

Note: The migration results in this report were tested and expressed based on single use articles.

- Overall Migration Test
 - Test method: With reference to EN 1186-5:2002
 - Migration ratio(S/V): 10dm²/L

Simulant (s) Used	Test Condition	Result(s) [mg/dm ²]	Maximum Permissible Limit [mg/dm ²]
3% Acetic acid	70°C for 2 hours	<3.00	10
10% Ethanol	70°C for 2 hours	<3.00	10
20% Ethanol	70°C for 2 hours	5.55	10

- Specific migration of Total Primary Aromatic Amine
 - Test method: 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 2 hours
 - Migration ratio(S/V): 6dm²/L

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Total Primary Aromatic Amine	<0.01	0.01



2. Specific migration of 29 Primary Aromatic Amine
- Test method: With reference to EN 13130-1:2004, followed by LC/MS/MS
 - Test condition: 3% Acetic acid, 40°C for 2 hours
 - Migration ratio(S/V): 6dm²/L

Test Item(s)	CAS No.	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
4-aminobiphenyl	92-67-1	ND	ND(DL:0.002)
benzidine	92-87-5	ND	ND(DL:0.002)
4-chloro-o-toluidine	95-69-2	ND	ND(DL:0.002)
2-naphthylamine	91-59-8	ND	ND(DL:0.002)
o-aminoazotoluene	97-56-3	ND	ND(DL:0.002)
5-nitro-o-toluidine	99-55-8	ND	ND(DL:0.002)
4-chloroaniline	106-47-8	ND	ND(DL:0.002)
4-methoxy-m-phenylenediamine	615-05-4	ND	ND(DL:0.002)
4,4'-diaminodiphenylmethane	101-77-9	ND	ND(DL:0.002)
3,3'-dichlorobenzidine	91-94-1	ND	ND(DL:0.002)
3,3'-dimethoxybenzidine	119-90-4	ND	ND(DL:0.002)
3,3'-dimethylbenzidine	119-93-7	ND	ND(DL:0.002)
4,4'-methylenedi-o-toluidine	838-88-0	ND	ND(DL:0.002)
p-cresidine	120-71-8	ND	ND(DL:0.002)
4,4'-methylene-bis- (2-chloro-aniline)	101-14-4	ND	ND(DL:0.002)
4,4'-oxydianiline	101-80-4	ND	ND(DL:0.002)
4,4'-thiodianiline	139-65-1	ND	ND(DL:0.002)
o-toluidine	95-53-4	ND	ND(DL:0.002)
4-methyl-m-phenylenediamine	95-80-7	ND	ND(DL:0.002)
2,4,5-trimethylaniline	137-17-7	ND	ND(DL:0.002)
o-anisidine	60-09-3	ND	ND(DL:0.002)
4-amino azobenzene	90-04-0	ND	ND(DL:0.002)
1,3-phenylenediamine	108-45-2	ND	ND(DL:0.002)
2,4-Dimethylaniline	95-68-1	ND	ND(DL:0.002)*
2,6-dimethyl-aniline	87-62-7	ND	ND(DL:0.002)*
Aniline	62-53-3	ND	ND(DL:0.002)*
p-Phenylenediamine	106-50-3	ND	ND(DL:0.002)*
1,5-Napthalenediamine	2243-62-1	ND	ND(DL:0.002)*
2,6-toluenediamine	823-40-5	ND	ND(DL:0.002)*

- Note: 1. ND denotes Not Detected and less than Detection Limit (Detection Limit=0.002mg/kg).
2. * denotes Limit specified by client

3. Specific Migration of Acrylonitrile
- Test method: With reference to BS EN 13130-3:2004
 - Test condition: 3% Acetic acid, 40°C for 2 hours
 - Migration ratio(S/V): 6dm²/L

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Acrylonitrile	<0.01	0.01

4. Specific Migration of 1,3 - Butadiene
- Test method: With reference to DD CEN/TS 13130-15:2004
 - Test condition: 3% Acetic acid, 40°C for 2 hours
 - Migration ratio(S/V): 6dm²/L

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
1,3 - Butadiene	<0.01	0.01

5. 1,3 - Butadiene content
- Test method: With reference to BS EN 13130-4:2004

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
1,3 - Butadiene	<0.2	1

6. Sensory test
- Test method: With reference to DIN 10955:2004
 - The submitted sample was simulated in distilled water at 40°C for 2 hours. After this treatment treated water was examined by panels with regard to any divergence in smell and taste.

Sample(s)	Testing Parameter	Grading result(s)	Recommended level
721673194-4-1	Transfer of taste	0	<3
	Transfer of smell	0	<3

Note: 1. 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

7. Specific migration of N-nitrosamines and N-nitrosatable substances
- Test method: With reference to EN13130-1:2004, followed by analysis using LC-MS-MS
 - Test condition: 3% Acetic acid, 40°C for 2 hours

Test Item(s)	Result(s) [mg/kg]	LOD [mg/kg]	Maximum Permissible Limit [mg/kg]
N-nitrosamines	ND	0.01	0.01
N-nitrosatable substances	ND	0.1	0.1

Note: 1. ND denotes not detected and less than LOD(LOD denotes limit of detection)

2. Tested N-nitrosamines are listed below:

	Compounds name	Abbreviation	CAS#
1	N-Nitrosodimethylamine	NDMA	62-75-9
2	N-nitrosodiethylamine	NDEA	55-18-5
3/4	N-nitrosopyrrolidine or N-nitroso N-methyl N-phenylamine	NPYR or NMPPhA	930-55-2 or 614-00-6
5	N-nitrosomorpholine	NMOR	59-89-2
6	N-Nitrosodi-n-propylamine	NDPA	621-64-7
7	N-nitrosopiperidine	NPIP	100-75-4
8	N-nitroso N-ethyl N-phenylamine	NEPhA	612-64-6
9	N-Nitrosodi-n-butylamine	NDBA	924-16-3
10	N-nitrosodibenzylamine	NDBzA	5336-53-8
11	N-Nitrosodiisononylamine	NDiNA	1207995-62-7
12	N-nitrosomethylethylamine	NMEA	10595-95-6
13	N-nitrosodiisobutylamine	NDiBA	997-95-5

8. Bisphenol A content

- Test method: With reference to EPA3550C-2007
- The sample was extracted by dichloromethane/methanol 90:10(v/v), then Bisphenol A content of solution was analyzed by LC/MS/MS

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Bisphenol A content	ND	Not Detected (DL:0.1)

- Note:
- DL denotes Detection Limit
 - ND denotes Not Detected and less than Detection Limit.

- Note:
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-END OF THE TEST REPORT-



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CLIENT NAME Shijiazhuang Hongray Group Co., Ltd.

CLIENT ADDRESS South Tongda Rd., East Dist., Jinzhou City, Hebei, 052260, China

TEST PERIOD 13-Oct-2022~27-Oct-2022

RESULT SUMMARY

1. The tested items **complied with** European Resolution Res AP (2004) 4 on rubber products intended to come into contact with foodstuffs.
- Overall migration test **PASS**

2. The tested items **complied with** European COMMISSION REGULATION (EU) No 2020/1245, (EU) No 10/2011 and its amendments on plastic materials and articles intended to come into contact with food.
- Specific Migration of Heavy metal **PASS**

Prepared By

Judy hu

(Judy Hu)
Report Drafter

Authorized By

Leo liu

(Leo Liu)
Authorized Signatory



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RECEIPT DATE / TEST DATE

13-Oct-2022/ 13-Oct-2022

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED

BY/ ON BEHALF OF THE CLIENTS AS

Sample Name: Disposable Nitrile Glove, Powder Free, Diamond Texture, Orange
Sample Specification: Size:M
Batch No./Date: /
Manufacturer: /

SAMPLE NO.	DESCRIPTION	PHOTOGRAPH
721674510-8-1	Orange gloves	

TEST RESULT(S)

Note: The migration results in this report were tested and expressed based on single use articles.

- Overall Migration Test
 - Test method: With reference to EN 1186-2:2022.
 - Migration ratio(S/V): 10dm²/L

Simulant (s) Used	Test Condition	Result(s) [mg/dm ²]	Maximum Permissible Limit [mg/dm ²]
Olive oil	70°C for 2 hours	<3.00	10





2. Specific migration of Heavy metals

- Test method: With reference to EN13130-1:2004, followed by ICP-MS.
- Test condition: 3% Acetic acid, 40°C for 2 hours
- Migration ratio(S/V): 6dm²/L

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Lithium (Li)	<0.1	0.6
Aluminium (Al)	<0.1	1
Chromium (Cr)	ND	ND (DL:0.01)
Manganese (Mn)	<0.1	0.6
Iron (Fe)	<5	48
Cobalt (Co)	<0.01	0.05
Nickel (Ni)	<0.01	0.02
Copper (Cu)	<1	5
Zinc (Zn)	2.05	5
Arsenic (As)	ND	ND (DL:0.01)
Cadmium (Cd)	ND	ND (DL:0.002)
Antimony (Sb)	<0.01	0.04
Barium (Ba)	<0.1	1
Mercury (Hg)	ND	ND (DL:0.01)
Lead (Pb)	ND	ND (DL:0.01)
Lanthanum (La)	<0.01	0.05
Europium (Eu)	<0.01	0.05
Gadolinium (Gd)	<0.01	0.05
Terbium (Tb)	<0.01	0.05
Sum of [La, Eu, Gd, Tb]	<0.04	0.05

- Note:
1. DL denotes Detection Limit
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2. The tested items **complied with** European COMMISSION REGULATION (EU) No 2020/1245, (EU) No 10/2011 and its amendments on plastic materials and articles intended to come into contact with food.
- Specific Migration of Heavy metal **PASS**

Prepared By

Judy hu

(Judy Hu)
Report Drafter

Authorized By

Leo liu

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- Overall Migration Test
 - Test method: With reference to EN 1186-2:2022.
 - Migration ratio(S/V): 10dm²/L

Simulant (s) Used	Test Condition	Result(s) [mg/dm ²]	Maximum Permissible Limit [mg/dm ²]
Olive oil	70°C for 2 hours	<3.00	10



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- Test method: With reference to EN13130-1:2004, followed by ICP-MS.
- Test condition: 3% Acetic acid, 40°C for 2 hours
- Migration ratio(S/V): 6dm²/L

Test Item(s)	Result(s) [mg/kg]	Maximum Permissible Limit [mg/kg]
Lithium (Li)	<0.1	0.6
Aluminium (Al)	<0.1	1
Chromium (Cr)	ND	ND (DL:0.01)
Manganese (Mn)	<0.1	0.6
Iron (Fe)	<5	48
Cobalt (Co)	<0.01	0.05
Nickel (Ni)	<0.01	0.02
Copper (Cu)	<1	5
Zinc (Zn)	2.05	5
Arsenic (As)	ND	ND (DL:0.01)
Cadmium (Cd)	ND	ND (DL:0.002)
Antimony (Sb)	<0.01	0.04
Barium (Ba)	<0.1	1
Mercury (Hg)	ND	ND (DL:0.01)
Lead (Pb)	ND	ND (DL:0.01)
Lanthanum (La)	<0.01	0.05
Europium (Eu)	<0.01	0.05
Gadolinium (Gd)	<0.01	0.05
Terbium (Tb)	<0.01	0.05
Sum of [La, Eu, Gd, Tb]	<0.04	0.05

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